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     (FILE 'MEDLINE, HCAPLUS, BIOSIS, EMBASE, WPIDS, SCISEARCH, AGRICOLA'
     ENTERED AT 13:57:13 ON 25 APR 2005)
L43           82 DUP REM L42 (69 DUPLICATES REMOVED)

=> d que l43
L1           141 SEA BEARMAN G?/AU
L2          2733 SEA FRASER S?/AU
L3           197 SEA LANSFORD R?/AU
L4          3024 SEA (L1 OR L2 OR L3)
L5             4 SEA L4 AND TUNABLE(5A) FILTER?
L6          5510 SEA TUNABLE(5A) FILTER?
L8            14 SEA L6 AND (FLUORESCEN? OR EXCITAB?)(5A)(MARKER? OR LABEL?)
L9         54828 SEA (LASER OR TWO(3A) PHOTON? OR MULTI(3A) PHOTON? OR MULTIPHOT
                 ON?)(5A) MICROSCOP?
L10          119 SEA L9 AND SEPARAT?(5A) FLUORESC?
L12            9 SEA L10 AND CELL?(5A) ACTIVIT?
L14           17 SEA L9 AND LINEAR(5A) UNMIX?
L15           20 SEA L10 (5A) FILTER?
L16         2878 SEA CONTRIBUT?(5A) FLUORESCE?
L17           37 SEA L16 AND L9
L18           24 SEA L17 AND CELL?
L19            7 SEA L10 AND CONTRIBUT?
L20        14626 SEA FLUORESCE?(5A)(RATIO OR RATIOS)
L21          300 SEA L20 AND L9
L24            9 SEA L21 AND CELL?(5A) ACTIVIT?
L25           48 SEA L9 AND PRINCIPAL(5A) COMPONENT?
L26           19 SEA L25 AND FLUORESC?
L27            1 SEA L9 AND DICHROMATIC(5A) MIRROR?
L28            5 SEA L9 AND LIQUID(5A) CRYSTAL?(5A) FILTER?
L29           25 SEA L9 AND ACOUST?(5A) OPTIC?(5A) FILT?
L30           75 SEA L9 AND PHOTOMULTIPLIER?(5A) TUB?
L31           52 SEA L30 AND FLUORESC?
L32            1 SEA L31 AND ACTIVIT?
L35          279 SEA L9 AND (GRATING OR PRISM)
L36           80 SEA L35 AND FLUORESC?
L37           15 SEA L36 AND FILTER?
L38         2163 SEA (VARY OR VARI?)(5A)(AMOUNT? OR CONCENTRAT?)(5A)(FLUOR? OR
                 MARKER? OR LABEL?)
L39           54 SEA L38 (5A)(STANDARD? OR MODEL? OR SAMPL?)
L40            2 SEA L39 AND SPHER?
L41          153 SEA L5 OR L8 OR L12 OR L14 OR L15 OR L18 OR L19 OR L24 OR (L26
                 OR L27 OR L28 OR L29) OR L32 OR L37 OR L40
L42          151 SEA L41 NOT MACHINE(3A) TRANSLATION
L43           82 DUP REM L42 (69 DUPLICATES REMOVED)


=> d ibib abs l43 1-82

L43  ANSWER 1 OF 82  HCAPLUS  COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER:         2005:302517  HCAPLUS
DOCUMENT NUMBER:          142:344906
TITLE:                    Scanning confocal microscopes capable of simple and
                          simultaneous fluorescence separation
INVENTOR(S):              Miyawaki, Atsushi; Fukano, Takashi; Nakada, Tatsuo
PATENT ASSIGNEE(S):       The Institute of Physical & Chemical Research Riken,
                          Japan; Olympus Optical Co., Ltd.
SOURCE:                   Jpn. Kokai Tokkyo Koho, 22 pp.
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CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005091895	A2	20050407	JP 2003-326510	20030918

PRIORITY APPLN. INFO.: JP 2003-326510 20030918

AB In the microscopes, plural signals with different frequency are modulated and applied on excitation light (e.g., Ti:Sapphire laser beams) to modulate them before irradiation on samples. The samples generate fluorescence which are then converted into elec. signals by photomultipliers, sped. by frequency or by phase, and output to form fluorescent images on displays. The frequency separators may be tunable bandpass **filters** or means carrying fast Fourier-transform. The microscopes are useful for real-time imaging of fluorescent dyes or proteins.

L43 ANSWER 2 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2005-083979 [10] WPIDS
DOC. NO. NON-CPI: N2005-073644
TITLE: **Laser** scanning type fluorescence **microscope** for living tissues, has **acoustic optic** tunable **filter** placed at overlapping paths of red and green LED groups, to select light of specific wavelength.
DERWENT CLASS: P81 S02 S03
PATENT ASSIGNEE(S): (OLYU) OLYMPUS OPTICAL CO LTD
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
JP 2005010296	A	20050113	(200510)*		12

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
JP 2005010296	A	JP 2003-172330	20030617

PRIORITY APPLN. INFO: JP 2003-172330 20030617
AN 2005-083979 [10] WPIDS
AB JP2005010296 A UPAB: 20050211
NOVELTY - The light source (1) has an **acoustic optic** tunable **filter** (AOTF) (13), arranged at the overlapping position of optical paths of red and green LED groups (11,12), to select and output light of specific wavelength from the LED groups.
USE - For observing living tissues.
ADVANTAGE - The microscope is compact and has less weight because of simple structure of light source. The operability of the microscope is improved.
DESCRIPTION OF DRAWING(S) - The figure shows a block diagram of the light source of the fluorescence microscope. (Drawing includes non-English language text).
light source 1

red LED group 11
green LED group 12
AOFT 13
collimating lens group 14,16
Dwg.2/6

L43 ANSWER 3 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2005-076219 [09] WPIDS
DOC. NO. NON-CPI: N2005-067372
TITLE: **Laser** scanning **microscope** illumination system has fast switching mirror to couple in additional wavelength.
DERWENT CLASS: P81 S02 S03 X26
INVENTOR(S): LANGE, R; MEISEL, U; REICH, M; WILHELM, S
PATENT ASSIGNEE(S): (JENA) ZEISS JENA GMBH CARL; (LANG-I) LANGE R; (MEIS-I) MEISEL U; (REIC-I) REICH M; (WILH-I) WILHELM S
COUNTRY COUNT: 34
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
EP 1496385	A1	20050112	(200509)*	GE	11
R: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IT LI LT LU LV MC MK NL PL PT RO SE SI SK TR					
DE 10332062	A1	20050127	(200509)		
US 2005046932	A1	20050303	(200517)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 1496385	A1	EP 2004-15828	20040706
DE 10332062	A1	DE 2003-10332062	20030711
US 2005046932	A1	US 2004-888098	20040709

PRIORITY APPLN. INFO: DE 2003-10332062 20030711
AN 2005-076219 [09] WPIDS
AB EP 1496385 A UPAB: 20050207
NOVELTY - A **laser** scanning **microscope** illumination system has a switchable mirror (US) or rotating mirror array with transparent gaps between the mirrors coupling in additional wavelengths (L5) from a fibre optic light guide (F1) and synchronised with the main illumination (L1-4) and **Acousto Optic** Tuneable **Filter** (AOTF).
USE - **Laser** scanning **microscope** with switchable coupling of additional wavelength for higher power excitation in biological investigations.
ADVANTAGE - Allows an additional wavelength higher power source to be coupled for process excitation. Can operate fast enough to allow illumination changes between line scans.
DESCRIPTION OF DRAWING(S) - The drawing shows the optical layout.
(Drawing includes non English language text)
Dwg.1/5

L43 ANSWER 4 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2005-093542 [11] WPIDS
DOC. NO. NON-CPI: N2005-081804
TITLE: **Laser** scanning **microscope**

illumination sensor coupler part of illumination from combining and fibre optic components to separate monitor diodes for each color.

DERWENT CLASS: P81 S02 S03 V07
INVENTOR(S): LIEDTKE, M; MEHNER, T; MEISEL, U; WILHELM, S
PATENT ASSIGNEE(S): (JENA) ZEISS JENA GMBH CARL; (LIED-I) LIEDTKE M; (MEHN-I) MEHNER T; (MEIS-I) MEISEL U; (WILH-I) WILHELM S
COUNTRY COUNT: 35
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
EP 1496384	A2	20050112	(200511)*	GE	5
R: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IT LI LT LU LV MC MK NL PL PT RO SE SI SK TR					
DE 10332064	A1	20050127	(200511)		
JP 2005031678	A	20050203	(200511)		7
US 2005035281	A1	20050217	(200514)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 1496384	A2	EP 2004-15953	20040707
DE 10332064	A1	DE 2003-10332064	20030711
JP 2005031678	A	JP 2004-199274	20040706
US 2005035281	A1	US 2004-888260	20040709

PRIORITY APPLN. INFO: DE 2003-10332064 20030711
AN 2005-093542 [11] WPIDS
AB EP 1496384 A UPAB: 20050217
NOVELTY - A **laser** scanning **microscope** illumination sensor (MD1-3) couples part of the illumination at the main color splitter (HFT), before coupling into a fibre optic guide (F1, 2) or in a beam splitter (ST2) after the guides.

DETAILED DESCRIPTION - Includes INDEPENDENT CLAIMs for the procedures used by the **laser** scanning **microscope** with measurement during a constant **Acousto Optical** Tunable **Filter** (AOTF) mode.

USE - Illumination sensor for **laser** scanning **microscopes**.

ADVANTAGE - Uses sampling components with high transmission efficiency so provides low illumination loss and good match between sampled signal and illumination signal polarization state. Allows concurrent measurements of the three colors.

DESCRIPTION OF DRAWING(S) - The drawing is a block diagram of the **laser** scanning **microscope**.

Acousto Optical Tunable **Filter** AOTF
Illumination module BM
Light guides F1, 2
Main color splitter HFT
Coupler K
Collimating optics KO
Lasers L1-3
Laser module LM
Illumination monitoring diodes MD1-3
Objective O
Beam splitter ST2

Dwg.1/1

L43 ANSWER 5 OF 82 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation on STN
ACCESSION NUMBER: 2005:241365 SCISEARCH
THE GENUINE ARTICLE: 900LP
TITLE: Single-photon counting multicolor **multiphoton fluorescence microscope**
AUTHOR: Buehler C; Kim K H; Greuter U; Schlumpf N; So P T C (Reprint)
CORPORATE SOURCE: 77 Massachusetts Ave, NE47-279, Cambridge, MA 02139 USA (Reprint); Paul Scherrer Inst, CH-5232 Villigen, Switzerland; MIT, Dept Mech Engn, Cambridge, MA 02139 USA; MIT, Biol Engn Div, Cambridge, MA 02139 USA
COUNTRY OF AUTHOR: USA; Switzerland
SOURCE: JOURNAL OF FLUORESCENCE, (JAN 2005) Vol. 15, No. 1, pp. 41-51.
Publisher: SPRINGER/PLENUM PUBLISHERS, 233 SPRING ST, NEW YORK, NY 10013 USA.
ISSN: 1053-0509.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 24
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We present a multicolor **multiphoton fluorescence microscope** with single-photon counting sensitivity. The system integrates a standard **multiphoton fluorescence microscope**, an optical **grating** spectrograph operating in the UV-Vis wavelength region, and a 16-anode photomultiplier tube (PMT). The major technical innovation is in the development of a multichannel photon counting card (mC-PhCC) for direct signal collection from multi-anode PMTs. The electronic design of the mC-PhCC employs a high-throughput, fully-parallel, single-photon counting scheme along with a high-speed electrical or fiber-optical link interface to the data acquisition computer. There is no electronic crosstalk among the detection channels of the mC-PhCC. The collected signal remains linear up to an incident photon rate of 10(8) counts per second. The high-speed data interface offers ample bandwidth for real-time readout: 2 MByte lambda-stacks composed of 16 spectral channels, 256 x 256 pixel image with 12-bit dynamic range can be transferred at 30 frames per second. The modular design of the mC-PhCC can be readily extended to accommodate PMTs of more anodes. Data acquisition from a 64-anode PMT has been verified. As a demonstration of system performance, spectrally resolved images of **fluorescent** latex spheres and ex-vivo human skin are reported. The multicolor **multiphoton microscope** is suitable for highly sensitive, real-time, spectrally-resolved three-dimensional imaging in biomedical applications.

L43 ANSWER 6 OF 82 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
ACCESSION NUMBER: 2004:307606 BIOSIS
DOCUMENT NUMBER: PREV200400311187
TITLE: System and method for monitoring **cellular activity**.
AUTHOR(S): Bearman, Gregory H. [Inventor, Reprint Author]; Fraser, Scott E. [Inventor]; Lansford, Russell D. [Inventor]
CORPORATE SOURCE: LaCanada-Flintridge, CA, USA
ASSIGNEE: California Institute of Technology
PATENT INFORMATION: US 6750036 June 15, 2004
SOURCE: Official Gazette of the United States Patent and Trademark

Office Patents, (June 15 2004) Vol. 1283, No. 3.
http://www.uspto.gov/web/menu/patdata.html. e-file.
ISSN: 0098-1133 (ISSN print).
DOCUMENT TYPE: Patent
LANGUAGE: English
ENTRY DATE: Entered STN: 7 Jul 2004
Last Updated on STN: 7 Jul 2004

AB A system and method for monitoring **cellular activity** in a **cellular** specimen. According to one embodiment, a plurality of excitable markers are applied to the specimen. A **multi-photon laser microscope** is provided to excite a region of the specimen and cause fluorescence to be radiated from the region. The radiating fluorescence is processed by a spectral analyzer to **separate** the **fluorescence** into respective wavelength bands. The respective bands of fluorescence are then collected by an array of detectors, with each detector receiving a corresponding one of the wavelength bands.

L43 ANSWER 7 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2004-440635 [41] WPIDS
DOC. NO. NON-CPI: N2004-348630
DOC. NO. CPI: C2004-165186
TITLE: Identifying a (bio)analyte by resonant light scattering comprises applying a capture probe to identifiable microparticles, scanning the particles to give a reference signature, and re-scanning after contacting the particles with a sample.
DERWENT CLASS: B04 D16 S03 T01 W02
INVENTOR(S): CUI, X; DAM, R J; HENDRICKSON, E R; JIANG, X; PERRY, M P; PROBER, J M; STEENHOEK, L E
PATENT ASSIGNEE(S): (DUPO) DU PONT DE NEMOURS & CO E I; (CUIX-I) CUI X; (DAMR-I) DAM R J; (HEND-I) HENDRICKSON E R; (JIAN-I) JIANG X; (PERR-I) PERRY M P; (PROB-I) PROBER J M; (STEE-I) STEENHOEK L E
COUNTRY COUNT: 106
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2004044232	A1	20040527	(200441)*	EN	190
RW: AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW					
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW					
AU 2003291512	A1	20040603	(200470)		
US 2005019842	A1	20050127	(200509)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2004044232	A1	WO 2003-US36092	20031106
AU 2003291512	A1	AU 2003-291512	20031106
US 2005019842	A1 Provisional	US 2002-424168P	20021106
		US 2003-702320	20031105

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2003291512	A1 Based on	WO 2004044232

PRIORITY APPLN. INFO: US 2002-424168P 20021106; US 2003-702320 20031105

AN 2004-440635 [41] WPIDS

AB WO2004044232 A UPAB: 20040629

NOVELTY - Identifying (M1) a (bio)analyte by resonant light scattering comprises applying a capture probe to substantially spherical identifiable microparticles, scanning the particles to give a reference signature, and re-scanning after contacting the particles with a sample

DETAILED DESCRIPTION - Identifying an analyte comprises:

(a) providing a light scanning source which produces light over an analytical wavelength range;

(b) providing at least two substantially spherical identifiable particles;

(c) applying at least one capture probe to the particles of (b) which binds to the surface of the particle, the capture probe having affinity for at least one analyte;

(d) scanning each particle of (c) one or more times over a first analytical wavelength range to produce at least one first reference resonant light scattering signature for each particle of (c), the first resonant light scattering signature uniquely identifying each particle;

(e) correlating the capture probe with each identified particle of (d);

(f) contacting the particle of (e) with a sample suspected of containing at least one analyte where, if the analyte is present in the sample, binding occurs between the capture probe and the analyte;

(g) scanning the particles of (f), one or more times over a second analytical wavelength range to produce at least one second binding resonant light scattering signature for each particle of (f), where the first reference and second binding resonant light scattering signatures may be the same or different, and the first and second analytical wavelength ranges may be the same or different;

(h) detecting binding of the analyte to the capture probe by comparing the differences between the resonant light scattering signatures selected from any of the first reference light scattering signature and any of the second light scattering signature; and

(i) identifying one or more bound analytes on the basis of the correlation made in step (e) and the second binding resonant light scattering signature.

INDEPENDENT CLAIMS are also included for:

(1) detection of analyte dissociation from a capture probe;

(2) an identifiable particle comprising a substantially spherical core, and a capture probe affixed to the outer surface of the particle, where the particle is characterized by a unique resonant light scattering signature when scanned over an analytical wavelength range of 1-20 nanometers over a range of optical wavelengths of 275-1900 nanometers, is 100 micrometers in diameter or less, has a refractive index of 1.6-2.1 over the analytical wavelength range, and is substantially non-fluorescing over the analytical wavelength range, or where the particle comprises one or more optically active layers having a thickness of 50 nanometers-20 micrometers and one or more biologically active or chemically active substantially transparent outer layers of thickness of 1 nanometer-10 micrometers, the layers overlaying the layer above;

(3) a population of identifiable particles described above;

(4) a microparticle based measuring system comprising:

(a) at least one substantially spherical identifiable particle in solution, each particle comprising a capture probe affixed to the outer surface of the particle where the particle is characterized by a unique resonant light scattering signature when scanned over an analytical wavelength range having a window spanning of 1-20 nanometers, over a range of optical wavelengths from 275-1900 nanometers, is 75 micrometers in diameter or less, and has a refractive index of 1.45-2.1 over the analytical wavelength range;

(b) a light scanning source for scanning the particle over the analytical wavelength range;

(c) an optical cell for presenting the particle in position and in an environment for detecting scattered light;

(d) a particle handling means for placing particles into the optical cell; and

(e) a detection means for detecting light from the scanned particle and converting the light to an electrical signal, or a microparticle based measuring system, where the imaging means comprises:

(i) a scanning diode laser light source;

(ii) an optical cell suitable for spectroscopic scattered light imaging and stray light rejection;

(iii) a means for contacting microparticles with analytes and reagents;

(iv) a microscope;

(v) a digital camera and monitor;

(vi) digital image acquisition hardware;

(vii) a computer operably linked to the elements of (a)-(f) as needed; and

(viii) software suitable for controlling the elements of (a)-(f), capturing data, and processing the data.

USE - The methods are useful for identifying an analyte or detecting analyte binding to a capture probe (claimed) for e.g., monitoring health status, detection of drugs of abuse, pregnancy and prenatal testing, donor matching for transplantation, therapeutic dosage monitoring, detection of disease (e.g., cancer antigens, pathogens), sensors for biodefense, medical and non-medical diagnostic tests, and similar applications. The methods are useful in multiplexed biological and chemical assays.

Dwg.0/37

L43 ANSWER 8 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN

ACCESSION NUMBER: 2004-270125 [25] WPIDS

DOC. NO. NON-CPI: N2004-213618

DOC. NO. CPI: C2004-105150

TITLE: Microscopy method for detecting or identifying biological material on surfaces or diagnosing amyloidogenic disease by implementing episcopic differential contrast microscopy plus epifluorescence microscopy.

DERWENT CLASS: B04 D16 S03

INVENTOR(S): BEST, E; KEEVIL, C W

PATENT ASSIGNEE(S): (UYSO-N) UNIV SOUTHAMPTON

COUNTRY COUNT: 106

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2004025295	A2	20040325	(200425)*	EN	73

RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK

DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP
KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG
PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ
VC VN YU ZA ZM ZW
AU 2003267573 A1 20040430 (200462)

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2004025295	A2	WO 2003-GB4004	20030916
AU 2003267573	A1	AU 2003-267573	20030916

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2003267573	A1 Based on	WO 2004025295

PRIORITY APPLN. INFO: GB 2002-21467 20020916
AN 2004-270125 [25] WPIDS
AB WO2004025295 A UPAB: 20040418
NOVELTY - A microscopy method for detecting or identifying biological material on surfaces by implementing episcopic differential contrast (EDIC) microscopy plus epifluorescence (EF) microscopy where the microscope incorporates a differential interference contrast (DIC) **prism** in the nosepiece, and an Immuno Gold Staining Block and long distance objectives.

DETAILED DESCRIPTION - The microscope incorporates a differential interference contrast (DIC) **prism** in the nosepiece, and an Immuno Gold Staining Block and long distance objectives so that the materials can be visualized without requirement for coverslip or oil or water immersion.

INDEPENDENT CLAIMS are also included for:

(1) a microscope apparatus for use in the method described above;

(2) a device adapted for screening in the water industry for the examination of biofilms, within medical establishments, contamination within the food industry, on food surfaces, abbatoirs, veterinary or dentistry practices, comprising the above defined microscope;

(3) a kit for use in the method above for diagnostic screening for prion disease in patients after tissue biopsy or for quantitative assessment of the extent of contamination bound to surfaces comprising associated packs of reagents specifically designed to be used in conjunction with the method above to enable visualization of target cells;

(4) a system for the diagnosis of disease including prion disease or any other amyloidogenic disease within bodily fluid of the human or animal subject, blood, urine, cerebral-spinal fluid, non-neuronal tissues (including spleen, lymph node), in cells, including living cells, or for rapidly screening biofilms and assessing their contents using the method or the microscope apparatus above;

(5) a portable (handheld) or conveyor belt stage models to enable the rapid scanning of large surface areas or numerous articles in very short periods of time using the above-defined method or the microscope apparatus;

(6) a quality control/safety scanner, able to rapidly visualize the structural integrity of opaque surfaces and tool/instruments thus quantifying the degree of pitting, scratching, etching or cracking that may have occurred, using the method or the microscope apparatus above;

(7) assessing or validation of the effects or effectiveness of

cleaning or disinfection methods on surfaces using the method or the microscope apparatus; and

(8) a kit for use in any of the above defined methods, comprising suitable probes for the biological material and/or any necessary stains.

USE - The microscopy method or the apparatus is useful in detecting or identifying biological material on surfaces, for diagnosing a disease including prion disease or any other amyloidogenic disease within bodily fluid of the human or animal subject, blood, urine, cerebrospinal fluid, non-neuronal tissues (including spleen, lymph node), in cells, including living cells, for rapidly screening biofilms and assessing their contents, and for screening in the water industry for the examination of biofilms, within medical establishments, contamination within the food industry, on food surfaces, abbatoirs, veterinary or dentistry practices. It is also useful for rapid scanning of large surface areas or numerous articles in very short periods of time, rapidly visualizing the structural integrity of opaque surfaces and tool/instruments thus quantifying the degree of pitting, scratching, etching or cracking that may have occurred, and for assessing or validating the effects or effectiveness of cleaning or disinfection methods on surfaces. The kit is useful for diagnostic screening for prion disease in patients after tissue biopsy, or for quantitative assessment of the extent of contamination bound to surfaces (all claimed). It is also useful for rapid and sensitive detection and/or identification of bio-hazardous materials and infectious diseases including amyloid plaque diseases e.g., Transmissable Spongiform Encephalopathies and Alzheimer's disease.

ADVANTAGE - The apparatus provides rapid, sensitive, non-contact screening of opaque and/or curved surfaces without the application of coverslips or immersion and without the generation of artifacts associated with other techniques. It provides rapid, sensitive detection of prion contamination on surgical stainless steel to the sub-micron level (less than 1 picogram). The apparatus can be adapted and adjusted to allow task specific operations.

Dwg.0/41

L43 ANSWER 9 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN

ACCESSION NUMBER: 2004-820974 [81] WPIDS
DOC. NO. NON-CPI: N2004-648215
DOC. NO. CPI: C2004-285217
TITLE: Apparatus for detecting biochemical interaction on biosensor comprises **tunable** laser light source and **tunable filter** with photodiode sensor.
DERWENT CLASS: B04 D16 S03
INVENTOR(S): CHANG-HASNAIN, C; CUNNINGHAM, B T; LI, P Y; MATEUS, C
PATENT ASSIGNEE(S): (SRUB-N) SRU BIOSYSTEMS; (SRUB-N) SRU BIOSYSTEMS LLC; (REGC) UNIV CALIFORNIA
COUNTRY COUNT: 108
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 2004223881	A1	20041111	(200481)*		21
WO 2004102193	A2	20041125	(200481)	EN	

RW: AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG

US UZ VC VN YU ZA ZM ZW

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 2004223881	A1	US 2003-434015	20030508
WO 2004102193	A2	WO 2004-US14262	20040507

PRIORITY APPLN. INFO: US 2003-434015 20030508
AN 2004-820974 [81] WPIDS
AB US2004223881 A UPAB: 20041216
NOVELTY - A measuring apparatus (102) comprises a tunable laser light source (104) for directing collimated white light towards a surface (124) of a biosensor (118), and a **tunable filter** with a photodiode sensor to receive light transmitted through the biosensor and to pass a narrow band of light having wavelengths centered at a passband wavelength and to reflect all other wavelengths.

USE - For detecting a biochemical interaction on a biosensor e.g. calorimetric resonant optical biosensor; for detecting a maximum wavelength of reflected light (claimed).

ADVANTAGE - The tunable laser illuminating source increases peak wavelength value (PWV) detecting resolution by an order of magnitude without incurring the cost and size disadvantages of high resolution spectrometer instruments. The measuring apparatus measures biochemical interactions occurring on surface of biosensor without use of **fluorescent** tags or calorimetric **labels**.

DESCRIPTION OF DRAWING(S) - The figure illustrates a basic diagram of an optical device.

measuring apparatus 102
light source 104
spectrometer 116
biosensor 118
surface of the biosensor. 124
Dwg.1/14

L43 ANSWER 10 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2004-354952 [33] WPIDS
DOC. NO. NON-CPI: N2004-283616
DOC. NO. CPI: C2004-135129
TITLE: Non-linear **fluorescence** microscope or endoscope has source of coherent light, and three light conductors to respectively direct the light to coupler, to the sample, and to direct **fluoresced** light from the coupler to light detection device.
DERWENT CLASS: B04 J04 S02 S03 V07 V08 W02 W04
INVENTOR(S): BIRD, D; GU, M
PATENT ASSIGNEE(S): (UYSW-N) UNIV SWINBURNE TECHNOLOGY
COUNTRY COUNT: 2
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 2004061072	A1	20040401	(200433)*		20
AU 2003204717	A1	20040422	(200457)		
AU 2003204717	B2	20050217	(200517)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 2004061072	A1	US 2003-460188	20030613
AU 2003204717	A1	AU 2003-204717	20030613
AU 2003204717	B2	AU 2003-204717	20030613

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2003204717	B2 Previous Publ.	AU 2003204717

PRIORITY APPLN. INFO: AU 2002-951841 20020930
AN 2004-354952 [33] WPIDS
AB US2004061072 A UPAB: 20040525
NOVELTY - Non-linear **fluorescence** microscope or endoscope comprises a source of coherent light to initiate non-linear **fluorescence** in a sample, a first light conductor to receive at its terminal light from the light source and direct the light to a coupler, a second light conductor to direct the light to the sample, and a third light conductor to direct **fluoresced** light from the coupler to a light detection device.

DETAILED DESCRIPTION - Non-linear **fluorescence** microscope or endoscope comprises a source of coherent light to initiate non-linear **fluorescence** in a sample of interest located at a sample region, a first light conductor positioned to receive at its terminal light from the light source and direct the light to a coupler, a second light conductor located to receive light introduced to the coupler from the first conductor and direct the light to the sample via a sample end of the second conductor, and a third light conductor to direct **fluoresced** light from the coupler to a light detection device via a terminal of the third light conductor. The sample end receives **fluoresced** light from the sample such that the second conductor may direct the **fluoresced** light to the coupler.

USE - The non-linear **fluorescence** microscope or endoscope is used for processes including microscopy, endoscopy, and/or endo microscopy. It may be combined with optical coherence tomography and/or sono-hysterography equipment for real time acquisition of detailed sample information that would ordinarily require two separate processes.

ADVANTAGE - The device allows for real time acquisition of detailed sample information that would ordinarily require two separate processes.

DESCRIPTION OF DRAWING(S) - The figure is a schematic diagram of a **two-photon fluorescence microscope** or endoscope.
Dwg.1/11

L43 ANSWER 11 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2004-223814 [21] WPIDS
DOC. NO. NON-CPI: N2004-176728
TITLE: **Two**-dimensional **photon** sorting spectroscopic **microscope** system for research application, provides output signals indicating photon events detected by detector elements of photomultiplier tube after spread light reception.
DERWENT CLASS: S03 S05 T01 V07
INVENTOR(S): WHITE, J G
PATENT ASSIGNEE(S): (WISC) WISCONSIN ALUMNI RES FOUND
COUNTRY COUNT: 1

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 6687000	B1	20040203	(200421)*		20

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 6687000	B1	US 2000-603687	20000626

PRIORITY APPLN. INFO: US 2000-603687 20000626
AN 2004-223814 [21] WPIDS
AB US 6687000 B UPAB: 20040326
NOVELTY - A spectral dispersive element (44) containing a concave holographic diffraction **grating**, receives the **fluorescent** light from a live cell (30) and spreads it according to light spectral content. A photomultiplier tube (46) receives the spread light and provides output signals indicating photon events detected by detector elements of the photomultiplier tube.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for **fluorescence** analysis method.

USE - For use in research and medical applications, for multi-photon lifetime and spectral imaging of live cell using **laser** scanning confocal **microscope**.

ADVANTAGE - The real-time analysis of the live cell is performed accurately. The need for complicated and expensive **filters** to separate fluorophore signals, is avoided.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic view of the spectroscopic microscope system.
light source 21
dichroic mirror 26
live cell 30
optical fiber 39
spectral dispersive element 44
detector array 46
Dwg.1/10

L43 ANSWER 12 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2004-555587 [54] WPIDS
DOC. NO. NON-CPI: N2004-439584
TITLE: Scanning-type **laser microscope** **separates fluorescence** generated by sample by laser irradiation, from laser light reflected by sample and guides fluorescent light towards photo-multiplier.
DERWENT CLASS: P81 S02 S03
PATENT ASSIGNEE(S): (OLYU) OLYMPUS OPTICAL CO LTD
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
JP 3539436	B2	20040707	(200454)*		9

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
JP 3539436	B2	JP 1993-348803	19931227

FILING DETAILS:

PATENT NO	KIND	PATENT NO
JP 3539436	B2 Previous Publ.	JP 07199075

PRIORITY APPLN. INFO: JP 1993-348803 19931227
AN 2004-555587 [54] WPIDS
AB JP 3539436 B UPAB: 20040823
NOVELTY - A photometry isolation unit **separates** the **fluorescence** generated by the sample (10) due to laser beam irradiation, from the laser light reflected by the sample and guides the fluorescent light towards the photo-multiplier (26). Dichroic **filter** (23) prevents the irradiation of laser beam having a wavelength in the visible region on the photo-multiplier.

USE - Scanning-type **laser microscope.**

ADVANTAGE - Enables performing the observation of fluorescent light and visible light permeating sample simultaneously without the influence of visible light reflected from sample. and also provides cheap detection system that responds only to visible light.

DESCRIPTION OF DRAWING(S) - The figure shows the outline structure of the scanning-type **laser microscope.** (Drawing includes non-English language text).

multi-line argon light source 01
laser line **filter** 03
dichroic mirrors 04,17
galvanometer scanner 05,06
pupil projection lens 07
objective lens 09
sample 10
condenser lens 11,16
reflective mirror 12
transmitted light detection unit 14
absorption **filters** 18,24
photo-multiplier 20,26
dichroic **filter** 23

Dwg.1/8

L43 ANSWER 13 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:1121354 HCAPLUS
DOCUMENT NUMBER: 142:172517
TITLE: Colorimetric method for identifying plant essential oil components that affect biofilm formation and structure
AUTHOR(S): Niu, C.; Gilbert, E. S.
CORPORATE SOURCE: Department of Biology, Georgia State University, Atlanta, GA, USA
SOURCE: Applied and Environmental Microbiology (2004), 70(12), 6951-6956
CODEN: AEMIDF; ISSN: 0099-2240
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The specific biofilm formation (SBF) assay, a technique based on crystal violet staining, was developed to locate plant essential oils and their

components that affect biofilm formation. SBF anal. determined that cinnamon, cassia, and citronella oils differentially affected growth-normalized biofilm formation by Escherichia coli. Examination of the corresponding essential oil **principal components** by the SBF assay revealed that cinnamaldehyde decreased biofilm formation compared to biofilms grown in Luria-Bertani broth, eugenol did not result in a change, and citronellol increased the SBF. To evaluate these results, two microscopy-based assays were employed. First, confocal **laser** scanning **microscopy** (CLSM) was used to examine E. coli biofilms cultivated in flow cells, which were quant. analyzed by COMSTAT, an image anal. program. The overall trend for five parameters that characterize biofilm development corroborated the findings of the SBF assay. Second, the results of an assay measuring growth-normalized adhesion by direct microscopy concurred with the results of the SBF assay and CLSM imaging. Viability staining indicated that there was reduced toxicity of the essential oil components to cells in biofilms compared to the toxicity to planktonic cells but revealed morphol. damage to E. coli after cinnamaldehyde exposure. Cinnamaldehyde also inhibited the swimming motility of E. coli. SBF anal. of three Pseudomonas species exposed to cinnamaldehyde, eugenol, or citronellol revealed diverse responses. The SBF assay could be useful as an initial step for finding plant essential oils and their components that affect biofilm formation and structure.

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 14 OF 82 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation on STN

ACCESSION NUMBER: 2005:42970 SCISEARCH
THE GENUINE ARTICLE: 882CC
TITLE: An electronically tunable ultrafast laser source applied to **fluorescence** imaging and **fluorescence** lifetime imaging microscopy
AUTHOR: Dunsby C (Reprint); Lanigan P M P; McGinty J; Elson D S; Requejo-Isidro J; Munro I; Galletly N; McCann F; Treanor B; Onfelt B; Davis D M; Neil M A A; French P M W
CORPORATE SOURCE: Univ London Imperial Coll Sci Technol & Med, Dept Phys, S Kensington Campus, London SW7 2AZ, England (Reprint); Univ London Imperial Coll Sci Technol & Med, Dept Phys, London SW7 2AZ, England; Univ London Imperial Coll Sci Technol & Med, Dept Sci Biol, London SW7 2AZ, England
COUNTRY OF AUTHOR: England
SOURCE: JOURNAL OF PHYSICS D-APPLIED PHYSICS, (7 DEC 2004) Vol. 37, No. 23, pp. 3296-3303.
Publisher: IOP PUBLISHING LTD, DIRAC HOUSE, TEMPLE BACK, BRISTOL BS1 6BE, ENGLAND.
ISSN: 0022-3727.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 45

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB **Fluorescence** imaging is used widely in microscopy and macroscopic imaging applications for fields ranging from biomedicine to materials science. A critical component for any **fluorescence** imaging system is the excitation source. Traditionally, wide-field systems use **filtered** thermal or arc-generated white light sources, while point scanning confocal microscope systems require spatially coherent (point-like) laser sources. Unfortunately, the limited range of visible wavelengths available from conventional laser sources constrains the design and usefulness of **fluorescent** probes in confocal

microscopy. A 'hands-off' **laser**-like source, electronically tunable across the visible spectrum, would be invaluable for **fluorescence** imaging and provide new opportunities, e.g. automated excitation fingerprinting and in situ measurement of excitation cross-sections. Yet more information can be obtained using **fluorescence** lifetime imaging (FLIM), which requires that the light source be pulsed or rapidly modulated. We show how a white light continuum, generated by injecting femtosecond optical radiation into a micro-structured optical fibre, coupled with a simple **prism** -based tunable **filter** arrangement, can fulfil all these roles as a continuously electronically tunable (435-1150 nm) visible ultrafast light source in confocal, wide-field and FLIM systems.

L43 ANSWER 15 OF 82 MEDLINE on STN DUPLICATE 1
ACCESSION NUMBER: 2004148035 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15041461
TITLE: Fluorescence microscopy studies with a fluorescent glibenclamide derivative, a high-affinity blocker of pancreatic beta-**cell** ATP-sensitive K+ currents.
AUTHOR: Zunkler Bernd J; Wos-Maganga Maria; Panten Uwe
CORPORATE SOURCE: Federal Institute for Drugs and Medical Devices, Kurt-Georg-Kiesinger-Allee 3, 53175 Bonn, Germany.. Zuenkler@bfarm.de
SOURCE: Biochemical pharmacology, (2004 Apr 15) 67 (8) 1437-44. Journal code: 0101032. ISSN: 0006-2952.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200404
ENTRY DATE: Entered STN: 20040326
Last Updated on STN: 20040422
Entered Medline: 20040421

AB Hypoglycemic sulfonylureas (e.g. tolbutamide, glibenclamide) exert their stimulatory effects on pancreatic beta-**cells** by closure of ATP-sensitive K(+) (K(ATP)) channels. Pancreatic K(ATP) channels are composed of two subunits, a pore-forming inwardly rectifying K(+) channel (Kir6.2) subunit and a regulatory subunit (the sulfonylurea receptor of subtype 1 (SUR1)) in a (SUR1/Kir6.2)(4) stoichiometry. The aim of the present study was to characterize the interaction of green-fluorescent 3-[3-(4,4 difluoro-5,7-dimethyl-4-bora-3a,4a-diaza-S-indacen-3-yl)propanamido] glibenclamide (Bodipy-glibenclamide) with pancreatic beta-**cell** K(ATP) channels using patch-clamp and fluorescence microscopy techniques. Bodipy-glibenclamide inhibited K(ATP) currents from the clonal insulinoma **cell** line RINm5F half-maximally at a concentration of 0.6nM. Using **laser**-scanning confocal **microscopy** Bodipy-glibenclamide was shown to induce a diffuse fluorescence across the RINm5F **cell**, but only about 17% of total Bodipy-glibenclamide-induced fluorescence intensity in RINm5F **cells** was due to specific binding to SUR1. Using fluorescence correlation spectroscopy, it could be demonstrated that the **fluorescence** label **contributes** to the protein binding and, therefore, possibly also to the non-specific binding of Bodipy-glibenclamide observed in RINm5F **cells**. Specific binding of Bodipy-glibenclamide to SUR1 in RINm5F **cells** might be localized to different intracellular structures (nuclear envelope, endoplasmic reticulum, Golgi compartment, insulin secretory granules) as well as to the plasma membrane. In conclusion, Bodipy-glibenclamide is a high-affinity blocker of pancreatic beta-**cell** K(ATP) currents

and can be used for visualizing SUR1 in intact pancreatic beta-**cells**, although non-specific binding must be taken into account in confocal microscopy experiments on intact beta-**cells**.

L43 ANSWER 16 OF 82 MEDLINE on STN DUPLICATE 2
ACCESSION NUMBER: 2004590177 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15563308
TITLE: Imaging tumor angiogenesis with fluorescent proteins.
AUTHOR: Hoffman Robert M
CORPORATE SOURCE: AntiCancer, Inc. San Diego, CA, USA.. all@anticancer.com
CONTRACT NUMBER: R43 CA099258 (NCI)
R43 CA101600 (NCI)
R43 CA103563 (NCI)
SOURCE: APMIS : acta pathologica, microbiologica, et immunologica Scandinavica, (2004 Jul-Aug) 112 (7-8) 441-9.
Journal code: 8803400. ISSN: 0903-4641.
PUB. COUNTRY: Denmark
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200501
ENTRY DATE: Entered STN: 20041130
Last Updated on STN: 20050113
Entered Medline: 20050112

AB We have developed three unique mouse models to image angiogenesis with fluorescent proteins, which are described in this review. First, we have adapted the surgical orthotopic implantation (SOI) model to image angiogenesis of human tumors **labeled** with green **fluorescent** protein (GFP) transplanted in nude mice. The nonluminous induced capillaries are clearly visible by contrast against the very bright tumor fluorescence examined either intravitally or by whole-body imaging in real time. Intravital images of an SOI model of human pancreatic tumors expressing GFP visualized angiogenic capillaries at both primary and metastatic sites. Whole-body optical imaging showed that blood vessel density increased linearly over a 20-week period in an SOI model of human breast cancer expressing GFP. Opening a reversible skin-flap in the light path markedly reduces signal attenuation, increasing detection sensitivity many-fold and enabling vessels to be externally visualized in GFP-expressing tumors growing on internal organs. The second model utilizes dual-color fluorescence imaging, effected by using red fluorescent protein (RFP)-expressing tumors growing in GFP-expressing transgenic mice that express GFP in all cells. This dual-color model visualizes with great clarity the details of the tumor-stroma interaction, especially tumor-induced angiogenesis. The GFP-expressing tumor vasculature, both nascent and mature, are readily distinguished interacting with the RFP-expressing tumor cells. Using a spectral imaging system based on liquid crystal **tunable filters**, we were able to separate individual spectral species on a pixel-by-pixel basis. Such techniques non-invasively visualized the presence of host GFP-expressing vessels within an RFP-labeled orthotopic human breast tumor by real-time whole-body imaging. The third model involves a transgenic mouse in which the regulatory elements of the stem cell marker nestin drive GFP. The nestin-GFP mouse expresses GFP in areas of the brain, hair follicle stem cells, and in a network of blood vessels in the skin interconnecting hair follicles. RFP-expressing tumors transplanted to nestin-GFP mice enable specific visualization of nascent vessels in skin-growing tumors such as melanoma. Thus, fluorescent proteins expressed in vivo offer very high resolution and sensitivity for real-time imaging of angiogenesis.

L43 ANSWER 17 OF 82 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
ACCESSION NUMBER: 2004:124508 BIOSIS
DOCUMENT NUMBER: PREV200400127361
TITLE: Optimizing imaging parameters for the **separation** of multiple labels in a **fluorescence** image.
AUTHOR(S): Neher, Erwin [Reprint Author]; Neher, Richard
CORPORATE SOURCE: Max Planck Institute Biophys. Chem., Goettingen, Germany
SOURCE: Biophysical Journal, (January 2004) Vol. 86, No. 1, pp. 318a. print.
Meeting Info.: 48th Annual Meeting of the Biophysical Society. Baltimore, MD, USA. February 14-18, 2004. Biophysical Society.
ISSN: 0006-3495 (ISSN print).
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 3 Mar 2004
Last Updated on STN: 3 Mar 2004

AB Modern **laser** scan **microscopes** allow the decomposition of fluorescence light into **contributions** from multiple labels by off-line calculation. Such techniques, termed **linear unmixing**' or spectral fingerprinting', use prior knowledge on the spectra of individual labels to calculate dye-concentrations at a given pixel. Here, the question is posed, how illumination intensities and wavelengths, as well as the borders of the spectral detection channels have to be selected, in order to perform such calculations with as little noise in the estimated dye concentrations as possible. This noise is determined by the photon shot noise of the fluorescence image, which calls for highest possible photon collection efficiency (high NA of objective, large quantum yield of detector). In addition, there is the requirement that the condition of the system of linear equations, which has to be inverted for the calculation of dye **contributions**, is optimal. What is required is a theory, which predicts the performance of a specific microscope configuration with respect to these two kinds of problems. Equations are presented, which allow to calculate the signal to noise ratio of the estimates for fluophore concentrations at a given pixel, based on prior knowledge of the spectra of participating fluorophores. It is found that a surprisingly small number of spectral channels is required for an almost optimal resolution, if the borders of these channels are optimally selected. The detailed consideration of photobleaching is found to be essential, whenever there is significant bleaching. Consideration of fluorescence life time information (in addition to spectral information) improves results, particularly when life times differ by more than a factor of two.

L43 ANSWER 18 OF 82 MEDLINE on STN DUPLICATE 3
ACCESSION NUMBER: 2004271367 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15170596
TITLE: Application of spectral imaging microscopy in cytomics and fluorescence resonance energy transfer (FRET) analysis.
AUTHOR: Ecker Rupert C; de Martin Rainer; Steiner Georg E; Schmid Johannes A
CORPORATE SOURCE: Competence Center BioMolecular Therapeutics, Vienna, Austria.. rupert.ecker@univie.ac.at
SOURCE: Cytometry A, (2004 Jun) 59 (2) 172-81.
Journal code: 101235694. ISSN: 1552-4922.
PUB. COUNTRY: United States

DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200412
ENTRY DATE: Entered STN: 20040602
Last Updated on STN: 20041220
Entered Medline: 20041213

AB BACKGROUND: Specific signal detection has been a fundamental issue in fluorescence microscopy. In the context of tissue samples, this problem has been even more pronounced, with respect to spectral overlap and autofluorescence. METHODS: Recent improvements in confocal **laser** scanning **microscopy** combine sophisticated hardware to obtain fluorescence emission spectra on a single-pixel basis and a mathematical procedure called "**linear unmixing**" of fluorescence signals. By improving both the specificity of fluorescence acquisition and the number of simultaneously detectable fluorochromes, this technique of spectral imaging (SI) allows complex interrelations in cells and tissues to be addressed. RESULTS: In a comparative approach, SI microscopy on a quantitative basis was compared to conventional bandpass (BP) filter detection, demonstrating substantial superiority of SI with respect to detection accuracy and dye combination. An eight-color immunofluorescence protocol for tissue sections was successfully established. Moreover, advanced use of SI in fluorescence resonance energy transfer (FRET) applications using enhanced green fluorescence protein (EGFP) and enhanced yellow fluorescence protein (EYFP) in a confocal set up could be demonstrated. CONCLUSIONS: This novel technology will help to perform complex multiparameter investigations at the cellular level by increasing the detection specificity and permitting simultaneous use of more fluorochromes than with classical techniques based on emission filters. Moreover, SI significantly extends the possibilities for specialized microscopy applications, such as the visualization of macromolecular interactions or conformational changes, by detecting FRET.

L43 ANSWER 19 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:560567 HCAPLUS
DOCUMENT NUMBER: 142:70865
TITLE: Cytomics - new technologies: towards a human cytome project
AUTHOR(S): Valet, G.; Leary, J. F.; Tarnok, A.
CORPORATE SOURCE: Max-Planck-Institut fuer Biochemie, Martinsried, Germany
SOURCE: Cytometry, Part A (2004), 59A(2), 167-171
CODEN: CPAYAV
PUBLISHER: Wiley-Liss, Inc.
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

AB A review. Background: Mol. cell systems research (cytomics) aims at the understanding of the mol. architecture and functionality of cell systems (cytomes) by single-cell anal. in combination with exhaustive bioinformatic knowledge extraction In this way, loss of information as a consequence of mol. averaging by cell or tissue homogenization is avoided. Progress: The cytomics concept has been significantly advanced by a multitude of current developments. Amongst them are confocal and **laser** scanning **microscopy, multiphoton fluorescence** excitation, spectral imaging, **fluorescence** resonance energy transfer (FRET), fast imaging in flow, optical stretching in flow, and miniaturized flow and image cytometry within labs. on a chip or laser microdissection, as well as the use of bead arrays. In addition,

biomol. anal. techniques like tyramide signal amplification, single-cell polymerase chain reaction (PCR), and the labeling of biomols. by quantum dots, magnetic nanobeads, or aptamers open new horizons of sensitivity and mol. specificity at the single-cell level. Date sieving or data mining of the vast amts. of collected multiparameter data for exhaustive multilevel bioinformatic knowledge extraction avoids the inadvertent loss of information from unknown mol. relations being inaccessible to a priori hypothesis. Challenges: It seems important to address the challenge of a human cytome project using hypothesis-driven mol. information collection from disease associated cell systems, supplemented by systematic and exhaustive knowledge extraction This will allow the description of the mol. setup of normal and abnormal cell systems within a relational knowledge system, permitting the standardized discrimination of abnormal cell states in disease. As one of the consequences, individualized predictions of further disease course in patients (predictive medicine by cytomics) by characteristic discriminatory data patterns will permit individualized therapies, identification of new pharmaceutical targets, and establishment of a standardized framework of relevant mol. alterations in disease. This special issue Cytometry, on new technologies in cytomics, focuses on prominent examples of this presently fast-moving scientific field, and represents one of the preconditions for the formulation of a human cytome project.

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 20 OF 82 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN

ACCESSION NUMBER: 2004:377575 BIOSIS
DOCUMENT NUMBER: PREV200400376847
TITLE: Why 16.7 million colors aren't enough: The case for spectral imaging.
AUTHOR(S): Levenson, Richard [Reprint Author]
CORPORATE SOURCE: Biomed Syst, CRI Inc, Woburn, MA, USA
SOURCE: Cytometry, (May 2004) Vol. 59A, No. 1, pp. 101. print.
Meeting Info.: XXII Congress of the International Society for Analytical Cytology. International Society for Analytical Cytology.
ISSN: 0196-4763 (ISSN print).
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 22 Sep 2004
Last Updated on STN: 22 Sep 2004

L43 ANSWER 21 OF 82 MEDLINE on STN DUPLICATE 4

ACCESSION NUMBER: 2003575378 MEDLINE
DOCUMENT NUMBER: PubMed ID: 14654941
TITLE: **Laser**-induced autofluorescence **microscopy** of normal and tumor human colonic tissue.
AUTHOR: Huang Zhiwei; Zheng Wei; Xie Shusen; Chen Rong; Zeng Haishan; McLean David I; Lui Harvey
CORPORATE SOURCE: Cancer Imaging Department, British Columbia Cancer Research Centre, Vancouver, BC V5Z 1L3, Canada..
zhuang@vanhosp.bc.ca
SOURCE: International journal of oncology, (2004 Jan) 24 (1) 59-63.
Journal code: 9306042. ISSN: 1019-6439.
PUB. COUNTRY: Greece
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English

FILE SEGMENT: Priority Journals
ENTRY MONTH: 200408
ENTRY DATE: Entered STN: 20031216
Last Updated on STN: 20040818
Entered Medline: 20040817

AB Laser-induced autofluorescence (LIAF) spectroscopy has been found to be a promising tool for early cancer diagnosis in various organs, but the reasons responsible for the spectral differences between normal and diseased tissue are still not well understood. In this study, a microspectrophotometer (MSP) system was used to identify the microscopic origins of tissue autofluorescence in the colon under the excitation of a helium-cadmium laser at 442 nm. Colonic tissue samples (normal: n=8, adenocarcinoma: n=10) were obtained from 12 patients with known or suspected malignancies of the colon. The intrinsic fluorescence spectra and images of fresh tissue sections prepared from normal and tumor colonic tissue were measured by the MSP system. Three distinct tissue layers of the colon were found for fluorescence, the mucosa, the submucosa and the muscularis propria, with submucosa being the most fluorescent. Differences in the spectral shape and intensity of the intrinsic fluorescence originating from different colonic layers indicate that fundamentally different fluorophores may be present in the respective tissue layers. There was no significant difference in the intrinsic fluorescence features of the submucosa between normal and tumor colonic tissue, but the fluorescence intensity of the submucosa in tumor tissue was significantly reduced due to the infiltration of tumor **cells** into the submucosa. The intrinsic fluorescence spectrum peaking at about 520 nm for tumor stroma appeared more evident than that of normal lamina propria. Limited areas of the lamina propria layer in some adenocarcinoma colon exhibited an emission band at about 635 nm, which was attributed to endogenous porphyrins in tumor. Autofluorescence microscopy revealed that differences in the clinically measured autofluorescence spectra between normal and tumor tissue were mainly due to thickening of the tumor mucosa resulting in a reduced submucosa **fluorescence contribution**, as well as the increased hemoglobin absorption in tumor tissue. Therefore, investigation of the microscopic origins of tissue autofluorescence and images can provide new insights into morphological structures and biochemical components of tissues, which are vital to improve the implementation of the LIAF technique for non-invasive in vivo tissue diagnostics.

L43 ANSWER 22 OF 82 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation on STN

ACCESSION NUMBER: 2004:19646 SCISEARCH
THE GENUINE ARTICLE: 755MU
TITLE: Optimizing imaging parameters for the **separation** of multiple labels in a **fluorescence** image
AUTHOR: Neher R; Neher E (Reprint)
CORPORATE SOURCE: Max Planck Inst Biophys Chem, D-37070 Gottingen, Germany (Reprint)
COUNTRY OF AUTHOR: Germany
SOURCE: JOURNAL OF MICROSCOPY-OXFORD, (JAN 2004) Vol. 213, Part 1, pp. 46-62.
Publisher: BLACKWELL PUBLISHING LTD, 9600 GARSINGTON RD, OXFORD OX4 2DG, OXON, ENGLAND.
ISSN: 0022-2720.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 18
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB A theoretical analysis is presented on how to separate the **contributions** from individual, simultaneously present fluorophores in a spectrally resolved image. Equations are derived that allow the calculation of the signal-to-noise ratio of the estimates for such **contributions**, given the spectral information on the individual fluorophores, the excitation wavelengths and intensities, and the number and widths of the spectral detection channels. We then ask how such imaging parameters have to be chosen for optimal fluorophore separation. We optimize the signal-to-noise ratio or optimize a newly defined 'figure of merit', which is a measure of efficiency in the use of emitted photons. The influence of photobleaching on the resolution and on the choice of imaging parameters is discussed, as well as the additional resolution gained by including fluorescence lifetime information. A surprisingly small number of spectral channels are required for an almost optimal resolution, if the borders of these channels are optimally selected. The detailed consideration of photobleaching is found to be essential, whenever there is significant bleaching. Consideration of fluorescence lifetime information (in addition to spectral information) improves results, particularly when lifetimes differ by more than a factor of two.

L43 ANSWER 23 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2003-300913 [29] WPIDS
CROSS REFERENCE: 2003-278818 [27]
DOC. NO. NON-CPI: N2003-239346
DOC. NO. CPI: C2003-078556
TITLE: Normalizing assay data, by selecting assay data, obtaining a linear relationship between the independent and dependent set of controls, and applying the linear relationship for producing normalized assay data.
DERWENT CLASS: B04 D16 S03
INVENTOR(S): ANDERSON, R R; BODZIN, L J; RHODES, K; WARDEN, L; YGUERABIDE, J
PATENT ASSIGNEE(S): (ANDE-I) ANDERSON R R; (BODZ-I) BODZIN L J; (RHOD-I) RHODES K; (WARD-I) WARDEN L; (YGUE-I) YGUERABIDE J; (GENI-N) GENICON SCI CORP
COUNTRY COUNT: 101
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2003021231	A2	20030313	(200329)*	EN	198
RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW					
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW					
US 2003139886	A1	20030724	(200352)		
EP 1432971	A2	20040630	(200443)	EN	
R: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI SK TR					
AU 2002331833	A1	20030318	(200452)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2003021231	A2	WO 2002-US28566	20020905
US 2003139886	A1 Provisional	US 2001-317543P	20010905

	Provisional	US 2002-364962P	20020312
	Provisional	US 2002-376049P	20020424
		US 2002-236169	20020905
EP 1432971	A2	EP 2002-768823	20020905
		WO 2002-US28566	20020905
AU 2002331833	A1	AU 2002-331833	20020905

FILING DETAILS:

PATENT NO	KIND	PATENT NO
EP 1432971	A2 Based on	WO 2003021231
AU 2002331833	A1 Based on	WO 2003021231

PRIORITY APPLN. INFO: US 2002-376049P 20020424; US 2001-317543P 20010905; US 2002-364962P 20020312; US 2002-236169 20020905

AN 2003-300913 [29] WPIDS

CR 2003-278818 [27]

AB WO2003021231 A UPAB: 20040813

NOVELTY - Normalizing (M1) assay data, comprising selecting a first and second population of assay data, where the first and second population comprises a dependent or independent set of controls, respectively, obtaining a linear relationship between the independent set and dependent set of controls, and applying the linear relationship to the first population, thus producing normalized assay data, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(1) assay system comprising at least one type of light scattering particles configured to be bound to an analyte of interest in a sample, and a scattered light detector configured to analyze analytes in the sample based on detected scattered light of at least first and second colors from the sample;

(2) apparatus for quantifying at least two types of analytes in an assay, comprising at least one processor and a memory, where the processor is configured to, accept spectral intensity data from a sample, where the spectral intensity data comprises signal from at least two types of light scattering particle, and where a first particle binds to a first analyte and a second particle binds to a second analyte, convert the spectral intensity data, using multi-spectral deconvolution, into a first and second intensity that corresponds to an abundance of the first and second label, and quantify the first analyte from the first intensity and a concentration of the second analyte from the second intensity;

(3) analyzer for quantifying at least two types of analytes in multiplexed assays, comprising at least one processor and a memory, where the processor is configured to, accept spectral image data from a sample that includes two or more spectrally selective images, where the spectral image data is comprised of signals from two labels and where a first label binds to a first analyte and a second label binds to a second analyte, convert the two or more spectrally selective images into individual images that either contain only the first label or contain only the second label, using multispectral deconvolution, and quantify the first or second analyte using particle counting from the individual images that contain only the first or second label;

(4) ratiometric analysis (M2), performed on assay data that comprises an array of features, comprising:

(a) selecting a first and second population of assay data, where the first population comprises a dependent set of controls and the second population comprises an independent set of controls;

(b) obtaining a linear relationship between the independent set of controls and the dependent set of controls, and applying the linear relationship to the first population of assay data, thus producing a first normalized assay data;

(c) obtaining a second linear relationship between the second set of controls and the first set of controls, where the first set of controls is treated as an independent variable, and the second set of controls is treated as a dependent variable in the linear relationship, applying the second linear relationship to the second population of assay data, thus producing a second normalized assay data;

(d) calculating a ratio of a value of the feature in the normalized assay data to a value of the feature in the second normalized assay data; and

(e) identifying the feature as regulated if the ratio exceeds a threshold value;

(5) identifying (M3) at least one anomalous feature in assay data, where the assay data comprises an array of features,

(6) comparing a first set of assay data to a second set of assay data, by:

(a) identifying a first or second set of controls in the first set of assay data and a second set of controls in the second set of data, where the first set of controls and the second set of controls are treated a equivalent;

(b) obtaining a linear relationship between the first set of controls and the second set of controls;

(c) applying the linear relationship to the first or second set of assay data, thus transforming the first or second set of assay data into a third frame of reference. and

(d) within the third frame of reference, comparing a feature from the first set of assay data that is not in the first set of controls, to a feature from the second set of assay data that is not in the second set of controls;

(7) performing an analyte assay, by detecting signals from several sites from an array format thus producing assay data, dividing the assay data into a first and second population, where the first population comprises a first set of controls and the second population comprises a second set of controls, obtaining a linear relationship between the first set of controls, and the second set of controls, applying the linear relationship to the assay data, thus producing normalized assay data, and correlating the signals to an amount of analyte in each of the sites;

(8) system for normalizing assay data, comprising a detector that detects signals from discrete areas of the microarray and produces microarray data, and computing device having embedded there a set of instructions to transform the microarray data by selecting a first population of assay data and a second population of assay data; and

(9) computer readable medium having recorded there a set of instructions for providing normalized microarray data.

USE - M1 is useful for normalizing assay data (claimed) and also for enabling future data cleansing or identification.

Dwg.0/50

L43 ANSWER 24 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2003-210626 [20] WPIDS
DOC. NO. NON-CPI: N2003-167792
TITLE: Optical system for separating illuminating and detecting beams of light in perspective uses a single passage to compensate for the splitting of a detecting light beam caused by an acousto-optical component due to double refraction..

DERWENT CLASS: P81 S02 S03
INVENTOR(S): BIRK, H
PATENT ASSIGNEE(S): (LEIC-N) LEICA MICROSYSTEMS HEIDELBERG GMBH; (BIRK-I) BIRK H
COUNTRY COUNT: 101
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2003012516	A1	20030213	(200320)*	GE	30
RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW					
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW					
DE 10137155	A1	20030227	(200323)		
EP 1421427	A1	20040526	(200435)	GE	
R: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI SK TR					
AU 2002333277	A1	20030217	(200452)		
US 2004174585	A1	20040909	(200459)		
JP 2004537747	W	20041216	(200482)		41

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2003012516	A1	WO 2002-EP8380	20020726
DE 10137155	A1	DE 2001-10137155	20010730
EP 1421427	A1	EP 2002-791475	20020726
		WO 2002-EP8380	20020726
AU 2002333277	A1	AU 2002-333277	20020726
US 2004174585	A1	WO 2002-EP8380	20020726
		US 2004-485426	20040130
JP 2004537747	W	WO 2002-EP8380	20020726
		JP 2003-517649	20020726

FILING DETAILS:

PATENT NO	KIND	PATENT NO
EP 1421427	A1 Based on	WO 2003012516
AU 2002333277	A1 Based on	WO 2003012516
JP 2004537747	W Based on	WO 2003012516

PRIORITY APPLN. INFO: DE 2001-10137155 20010730
AN 2003-210626 [20] WPIDS
AB WO2003012516 A UPAB: 20030324
NOVELTY - An acousto-**optical** component (13) like an **acousto-optical** (AO) tunable **filter,** an AO deflector or an AO modulator separates an illuminating beam (11) of light and a detecting (29) beam of light in perspective. A compensating element (31) compensates in a single passage for the splitting of the detecting beam of light caused by the acousto-optical component due to double refraction.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a scan microscope with a source of light for generating an illuminating beam

of light, a detector to pick up a detecting beam of light emitted from a specimen and an acousto-optical component for separating the illuminating and detecting beams of light in perspective.

USE - In **laser** scanning **microscopy**.

ADVANTAGE - This system produces little loss and no disruptive beam splits.

DESCRIPTION OF DRAWING(S) - The drawing shows the structural layout of a scan microscope.

Illuminating beam of light 11
Acousto-optical component 13
Detecting beam of light 29
Compensating element 31

Dwg.1/5

L43 ANSWER 25 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2003-356615 [34] WPIDS
DOC. NO. NON-CPI: N2003-284922
TITLE: Microscope for cyto flows has **acousto optic** components to set fluorescence **filter** response.
DERWENT CLASS: P81 S03
INVENTOR(S): KNEBEL, W
PATENT ASSIGNEE(S): (LEIC-N) LEICA MICROSYSTEMS HEIDELBERG GMBH
COUNTRY COUNT: 2
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
DE 20216583	U1	20030123	(200334)*		24
US 2003123144	A1	20030703	(200345)		
US 6867899	B2	20050315	(200520)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 20216583	U1	DE 2002-20216583	20021025
US 2003123144	A1	US 2002-316544	20021211
US 6867899	B2	US 2002-316544	20021211

PRIORITY APPLN. INFO: DE 2001-10162789 20011220
AN 2003-356615 [34] WPIDS
AB DE 20216583 U UPAB: 20030529

NOVELTY - A **microscope** has a tunable fluorescent **laser** (1,3) and spectrometer (39) connected to the sample (27) by an **acousto optic** tunable **filter**, beam splitter or detector (51, 53)

USE - Microscope for scanning fluoroscopy of cell flows.

ADVANTAGE - The **acousto optic filter** has a sharp **filter** characteristic which allows better measurements than trichroic plates that do not restrict the measurement to the excitation wavelength. The sharper characteristic extracts less light from the image and so produces less image distortion when compared with the fluorescence.

DESCRIPTION OF DRAWING(S) - The drawing is a block diagram of the microscope system.

Laser light sources 1, 3
Sample 27

Spectrometer 39
Acousto optic component 51, 53
Dwg.1/7

L43 ANSWER 26 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2003-383374 [37] WPIDS
DOC. NO. NON-CPI: N2003-306200
DOC. NO. CPI: C2003-102037
TITLE: Detection system, for the study of biological samples, comprises the breakdown of light emerging from sample points/point distributions to form an alpha stack for the spectral distribution to be measured by separate detection channels.
DERWENT CLASS: B04 P81 S03
INVENTOR(S): TILLE, S; WOLLESCHENSKY, R; ZIMMERMANN, B
PATENT ASSIGNEE(S): (JENA) ZEISS JENA GMBH CARL; (TILL-I) TILLE S; (WOLL-I) WOLLESCHENSKY R; (ZIMM-I) ZIMMERMANN B
COUNTRY COUNT: 32
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
DE 10151217	A1	20030417	(200337)*		27
EP 1308715	A1	20030507	(200338)	GE	
R: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI SK TR					
JP 2003185581	A	20030703	(200352)		14
US 2003151741	A1	20030814	(200355)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 10151217	A1	DE 2001-10151217	20011016
EP 1308715	A1	EP 2002-20864	20020918
JP 2003185581	A	JP 2002-294757	20021008
US 2003151741	A1	US 2002-57571	20020124

PRIORITY APPLN. INFO: DE 2001-10151217 20011016
AN 2003-383374 [37] WPIDS
AB DE 10151217 A UPAB: 20030612
NOVELTY - Detection system for the study of biological samples, comprising the breakdown of light emerging from sample points or point distributions to form an lambda stack, where the spectral distribution is measured by separate detection channels, and the detection signals are arranged with at least one of the position co-ordinates and/or the measurement time, to be stored in memory, is new.

USE - The system is useful for the quantitative analysis of biological samples with an unmixing action, and the qualitative analysis by **principal component** analysis (PCA).

ADVANTAGE - The system gives detection of complete spectra for the identification, separation and arrangement of most analytical and functional sample characteristics to spatial part-structures or dynamic processes. It is also possible to give simultaneous analyses of samples with multiple fluorophores with overlapping **fluorescent** spectra, even with thick samples.

DESCRIPTION OF DRAWING(S) - The drawing shows block diagrams of the detection system. Diagram contains non-English language text.

Line detector DE
Angular dispersive unit DI
Electrical signals ES
Light from the sample L
Pinhole diaphragm PH
Focus lens PO
Dwg.5/18

L43 ANSWER 27 OF 82 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation on STN
ACCESSION NUMBER: 2003:229434 SCISEARCH
THE GENUINE ARTICLE: 654AQ
TITLE: Evanescent resonator chips: a universal platform with superior sensitivity for **fluorescence**-based microarrays
AUTHOR: Neuschafer D (Reprint); Budach W; Wanke C; Chibout S D
CORPORATE SOURCE: Novartis Pharma AG, CH-4002 Basel, Switzerland (Reprint)
COUNTRY OF AUTHOR: Switzerland
SOURCE: BIOSENSORS & BIOELECTRONICS, (APR 2003) Vol. 18, No. 4, pp. 489-497.
Publisher: ELSEVIER ADVANCED TECHNOLOGY, OXFORD FULFILLMENT CENTRE THE BOULEVARD, LANGFORD LANE, KIDLINGTON, OXFORD OX5 1GB, OXON, ENGLAND.
ISSN: 0956-5663.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 21
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB In the present paper, we introduce for the first time a novel generation of a universal **fluorescence** transducer, the so-called evanescent resonator (ER) platform. The device comprises a transparent substrate and a thin dielectric surface layer containing sub-micron corrugated structures. The ER chip exhibits an inherent physical signal amplification due to confinement of excitation energy in the thin surface layer. Energy confinement is based on interference effects created by the abnormal reflection geometry and leads to efficient excitation of surface-bound fluorophores in the evanescent field of the chip. The evanescent resonator platform has the potential to increase the **fluorescence** yield of labelled biomolecules to more than 100-fold when compared with conventional. microarray chips. The new ER device has been developed for analysis of nucleic acids from different species. However, it can be used with all kinds of biomolecular affinity systems. The platform combines superior sensitivity with exceptional reproducibility and ease of use. The chips are compatible with commercially available **laser** scanners, confocal **microscopes**, and portable or miniaturised CCD read-out equipment.

L43 ANSWER 28 OF 82 MEDLINE on STN
ACCESSION NUMBER: 2003348822 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12880339
TITLE: Spectroscopic approach for monitoring two-photon excited fluorescence resonance energy transfer from homodimers at the subcellular level.
AUTHOR: LaMorte Vickie J; Zoumi Aikaterini; Tromberg Bruce J
CORPORATE SOURCE: University of California, Beckman Laser Institute, Laser Microbeam and Medical Program, Irvine, California 92612, USA.. lamorte@bli.uci.edu
CONTRACT NUMBER: P41RR01192 (NCRR)

SOURCE: Journal of biomedical optics, (2003 Jul) 8 (3) 357-61.
Journal code: 9605853. ISSN: 1083-3668.
PUB. COUNTRY: United States
DOCUMENT TYPE: (EVALUATION STUDIES)
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200402
ENTRY DATE: Entered STN: 20030726
Last Updated on STN: 20040206
Entered Medline: 20040205

AB We have employed a spectroscopic approach for monitoring fluorescence resonance energy transfer (FRET) in living cells. This method provides excellent spectral **separation** of green **fluorescent** protein (GFP) mutant signals within a subcellular imaging volume using two-photon excited fluorescence imaging and spectroscopy (TPIS-FRET). In contrast to current FRET-based methodologies, TPIS-FRET does not rely on the selection of optical **filters**, ratiometric image analysis, or bleedthrough correction algorithms. Utilizing the intrinsic optical sectioning capabilities of TPIS-FRET, we have identified protein-protein interactions within discrete subcellular domains. To illustrate the applicability of this technique to the detection of homodimer formation, we demonstrated the in vivo association of promyleocyte (PML) homodimers within their corresponding nuclear body.

L43 ANSWER 29 OF 82 MEDLINE on STN DUPLICATE 5
ACCESSION NUMBER: 2003348819 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12880336
TITLE: Multiphoton excitation spectra in biological samples.
AUTHOR: Dickinson Mary E; Simbuerger Eva; Zimmermann Bernhard; Waters Christopher W; Fraser Scott E
CORPORATE SOURCE: California Institute of Technology, Beckman Institute, Biological Imaging Center, Pasadena, California 91125, USA.. maryd@gg.caltech.edu
CONTRACT NUMBER: HD 37105 (NICHD)
SOURCE: Journal of biomedical optics, (2003 Jul) 8 (3) 329-38.
Journal code: 9605853. ISSN: 1083-3668.
PUB. COUNTRY: United States
DOCUMENT TYPE: (EVALUATION STUDIES)
Journal; Article; (JOURNAL ARTICLE)
(VALIDATION STUDIES)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200402
ENTRY DATE: Entered STN: 20030726
Last Updated on STN: 20040206
Entered Medline: 20040205

AB **Multiphoton microscopy** is becoming a popular mode of live and fixed cell imaging. This mode of imaging offers several advantages due to the fact that fluorochrome excitation is a nonlinear event resulting in excitation only at the plane of focus. Multiphoton excitation is enhanced by the use of ultrafast lasers emitting in the near IR, offering better depth penetration coupled with efficient excitation. Because these lasers, such as titanium:sapphire lasers, offer tunable output it is possible to use them to collect multiphoton excitation spectra. We use the software-tunable Coherent Chameleon laser coupled to the Zeiss LSM 510 META NLO to acquire x-y images of biological samples at multiple excitation wavelengths, creating excitation lambda stacks. The

mean intensity of pixels within the image plotted versus excitation wavelength reveals the excitation spectra. Excitation lambda stacks can be separated into individual images corresponding to the signal from different dyes using **linear unmixing** algorithms in much the same way that emission fingerprinting can be used to generate crosstalk free channels from emission lambda stacks using the META detector. We show how this technique can be used to eliminate autofluorescence and to produce crosstalk-free images of dyes with very close overlap in their emission spectra that cannot be separated using emission fingerprinting. Moreover, excitation finger- printing can be performed using nondescanned detectors (NDDs), offering more flexibility for eliminating autofluorescence or crosstalk between fluorochromes when imaging deep within the sample. Thus, excitation fingerprinting complements and extends the functions offered by the META detector and emission fingerprinting. We correct biases in the **laser** and **microscope** transmission to acquire realistic **multiphoton** excitation spectra for fluorochromes within cells using the microscope, which enables the optimization of the excitation wavelength for single and multilabel experiments and provides a means for studying the influence of the biological environment on nonlinear excitation.

L43 ANSWER 30 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 6
ACCESSION NUMBER: 2003:694973 HCAPLUS
DOCUMENT NUMBER: 139:320496
TITLE: Spatiotemporal visualization of intracellular Ca2+ in living heart muscle **cells** viewed by confocal **laser** scanning **microscopy**
AUTHOR(S): Tanaka, Hideo; Takamatsu, Tetsuro
CORPORATE SOURCE: Department of Pathology and Cell Regulation, Kyoto Prefectural University of Medicine, Kyoto, 602-8566, Japan
SOURCE: Acta Histochemica et Cytochemica (2003), 36(3), 193-204
CODEN: ACHCBO; ISSN: 0044-5991
PUBLISHER: Japan Society of Histochemistry and Cytochemistry
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review. Ca2+ ions play pivotal roles in the excitation and contraction-relaxation processes of heart muscle **cells**. The advent of digital-imaging techniques, especially confocal **laser** scanning **microscopy**, as well as Ca2+-sensitive **fluorescent** dyes, has **contributed** substantially to the precise understanding of the spatiotemporal aspects of the intracellular Ca2+ dynamics in cardiomyocytes. In this review article, we review the progress in the cytochem. and histochem. researches on the intracellular Ca2+ concentration ([Ca2+]i) of the heart. Recent imaging technologies have revealed that subcellular [Ca2+]i dynamics are spatiotemporally heterogeneous under certain pathol. conditions. We focus on the Ca2+ waves, i.e., representative of abnormal [Ca2+]i dynamics that emerge under [Ca2+]i-overloaded conditions, analyzed in prepns. ranging from the enzymically isolated myocytes to the whole heart. The pathophysiol. significance of Ca2+ waves in the heart is also discussed.
REFERENCE COUNT: 70 THERE ARE 70 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 31 OF 82 MEDLINE on STN DUPLICATE 7
ACCESSION NUMBER: 2003181313 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12701131

TITLE: Flow cytometric measurement of fluorescence (Forster) resonance energy transfer from cyan fluorescent protein to yellow fluorescent protein using single-laser excitation at 458 nm.

AUTHOR: He Liusheng; Bradrick Thomas D; Karpova Tatiana S; Wu Xiaoli; Fox Michael H; Fischer Randy; McNally James G; Knutson Jay R; Grammer Amrie C; Lipsky Peter E

CORPORATE SOURCE: Flow Cytometry Section, Office of Science and Technology, National Institute of Arthritis and Musculosketal and Skin Diseases/NIH, 9000 Rockville Pike, Building 10, Room 9N228, Bethesda, MD 20892, USA.. lipskyp@mail.nih.gov

SOURCE: Cytometry A, (2003 May) 53 (1) 39-54.
Journal code: 101235694. ISSN: 1552-4922.

PUB. COUNTRY: United States

DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)

LANGUAGE: English

FILE SEGMENT: Priority Journals

ENTRY MONTH: 200402

ENTRY DATE: Entered STN: 20030418
Last Updated on STN: 20040214
Entered Medline: 20040213

AB BACKGROUND: Use of distinct green fluorescent protein (GFP) variants permits the study of protein-protein interactions and colocalization in viable transfected cells by fluorescence (Forster) resonance energy transfer (FRET). Flow cytometry is a sensitive method to detect FRET. However, the typical dual-laser methods used in flow cytometric FRET assays are not generally applicable because they require a specialized krypton ultraviolet (UV) laser. The purpose of this work was to develop a flow cytometric method to detect FRET between cyan fluorescent protein (CFP; donor) and yellow fluorescent protein (YFP; acceptor) by using the 458-nm excitation from a single tunable argon-ion laser. METHODS: FUSE-binding protein (FBP) interacting repressor (FIR) and FBP are c-myc transcription factors and are known to interact physically. To examine their interaction within viable cells, FIR and the binding motif of FBP, the FBP central domain (FBPcd), were fused with CFP and YFP, respectively, and this pair of fluorescently-tagged proteins was used to detect FRET in vivo. Cells transfected with expression plasmids encoding a CFP-FIR fusion protein and YFP as a negative control, a CFP-YFP fusion protein as a positive control, or CFP-FIR and YFP-FBPcd fusion proteins were examined for FRET after excitation with a 458-nm line from a tunable argon-ion laser. FRET was measured as the ratio of YFP:CFP emission or as YFP emission at 564-606 nm. Conventional FRET using the 413-nm UV line from a krypton laser was examined for comparison. **Fluorescence** signals were **separated** with a customized optical **filter** configuration using 530-nm shortpass, 500-nm longpass, and 560-nm shortpass dichroics in addition to 488/30 nm (CFP), 530/30 nm (YFP), and 585/42 nm (FRET) bandpass **filters**. Further, a **laser** -scanning confocal **microscopic** photobleach technique was used to document that FRET occurred by showing that the intensity of donor CFP fluorescence increased after its acceptor YFP was photobleached. Steady-state spectrofluorometry was used to confirm and validate the results detected by flow cytometry. RESULTS: Upon excitation with the 458-nm line of the argon-ion laser, the enhancement of the acceptor YFP signal and the decrease of the CFP signal were easily detected in cells transfected with the CFP-YFP construct or CFP-FIR and YFP-FBPcd. Similarly, FRET was detected under these conditions when the YFP emission was assessed at 564-606 nm. A strong correlation was observed between the increase in the YFP:CFP ratio and the YFP emission detected at 564-606 nm, consistent with the conclusion that FRET was detected comparably by both

methods. A conventional flow cytometric krypton UV-laser technique was also used to confirm that FRET occurred with the CFP-YFP fusion protein and from CFP-FIR --> YFP-FBPcd. FRET also was confirmed by a confocal photobleaching technique, in which donor CFP intensity was enhanced after its acceptor YFP was photobleached. The flow cytometric and confocal microscopic results were confirmed by spectrofluorometry. CONCLUSION: These results demonstrated the feasibility of flow cytometric detection of FRET signals from CFP to YFP by excitation with the 458-nm line from the tunable argon-ion laser. The method was as efficient as excitation with the krypton UV laser and therefore should make FRET a more generally available flow cytometric technique.
Published 2003 Wiley-Liss, Inc.

L43 ANSWER 32 OF 82 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
ACCESSION NUMBER: 2002:382796 BIOSIS
DOCUMENT NUMBER: PREV200200382796
TITLE: System and method for monitoring **cellular activity.**
AUTHOR(S): Bearman, Gregory H. [Inventor, Reprint author]; Fraser, Scott E. [Inventor]; Lansford, Russell D. [Inventor]
CORPORATE SOURCE: Pasadena, CA, USA
ASSIGNEE: California Institute of Technology
PATENT INFORMATION: US 6403332 June 11, 2002
SOURCE: Official Gazette of the United States Patent and Trademark Office Patents, (June 11, 2002) Vol. 1259, No. 2. http://www.uspto.gov/web/menu/patdata.html. e-file. CODEN: OGUPE7. ISSN: 0098-1133.
DOCUMENT TYPE: Patent
LANGUAGE: English
ENTRY DATE: Entered STN: 10 Jul 2002
Last Updated on STN: 10 Jul 2002
AB A system and method for monitoring **cellular activity** in a **cellular** specimen. According to one embodiment, a plurality of excitable markers are applied to the specimen. A **multi-photon laser microscope** is provided to excite a region of the specimen and cause fluorescence to be radiated from the region. The radiating fluorescence is processed by a spectral analyzer to **separate** the **fluorescence** into respective wavelength bands. The respective bands of fluorescence are then collected by an array of detectors, with each detector receiving a corresponding one of the wavelength bands.

L43 ANSWER 33 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 8
ACCESSION NUMBER: 2002:375801 HCAPLUS
DOCUMENT NUMBER: 137:322119
TITLE: Simultaneous measurement of one- and two-photon excited fluorescence from a single sample: a detection method for oligonucleotides
AUTHOR(S): Alexander, Troy; Tran, Chieu D.
CORPORATE SOURCE: Department of Chemistry, Marquette University, Milwaukee, WI, 53201, USA
SOURCE: Applied Optics (2002), 41(12), 2285-2291 CODEN: APOPAI; ISSN: 0003-6935
PUBLISHER: Optical Society of America
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A new method has been developed that is based on the use of a single-excitation wavelength from a cw laser to excite simultaneously

one-photon and two-photon fluorescence (TPF). Fluorescence bands of a sample containing two oligonucleotides, one **labeled** with a one-photon **fluorescence** dye and the other with a TPF dye, can be measured simultaneously. The two fluorescence bands are well separated, because the one-photon excited fluorescence band is red shifted, whereas the TPF band is blueshifted from the excitation wavelength. The spectral separation was found to be as large as 200 nm when ADS 840NCS was used to **label** one oligonucleotide for one-photon **fluorescence** and Rhodamine Red-X dye was used for TPF. Spectral overlapping problem that plagues current DNA sequencing techniques can be eliminated effectively with this method.

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 34 OF 82 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN

ACCESSION NUMBER: 2002:219708 BIOSIS
DOCUMENT NUMBER: PREV200200219708
TITLE: Ca2+-independent vesicular catecholamine release in PC12 cells by nanomolar concentrations of Pb2+.
AUTHOR(S): Westerink, Remco H. S. [Reprint author]; Vijverberg, Henk P. M.
CORPORATE SOURCE: Institute for Risk Assessment Sciences, Utrecht University, NL-3508 TD, Utrecht, Netherlands
R.Westerink@iras.uu.nl
SOURCE: Journal of Neurochemistry, (March, 2002) Vol. 80, No. 5, pp. 861-873. print.
CODEN: JONRA9. ISSN: 0022-3042.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 27 Mar 2002
Last Updated on STN: 27 Mar 2002

AB Effects of Pb2+ on vesicular catecholamine release in intact and ionomycin-permeabilized PC12 cells were investigated using carbon fibre microelectrode amperometry. Changes in intracellular Pb2+ and Ca2+ were measured from indo-1 fluorescence by confocal **laser** scanning **microscopy**. Depolarization of intact cells and superfusion of permeabilized cells with saline containinggtoreq100 muM Ca2+ rapidly evokes quantal catecholamine release. Superfusion with up to 10 muM Pb2+-containing saline evokes release of similar catecholamine quanta after a concentration-dependent delay. Thresholds to induce exocytosis within 30 min of exposure are between 1 and 10 muM Pb2+ in intact cells and between 10 and 30 nM Pb2+ in permeabilized cells. Additional inhibition of exocytosis occurs in permeabilized cells exposed to 10 muM Pb2+. Using membrane-impermeable and -permeable chelators it is demonstrated that intracellular Ca2+ is not required for Pb2+-induced exocytosis. In indo-1-loaded cells Pb2+ reduces the fluorescence intensity after a concentration-dependent delay, whereas the **fluorescence ratio**, indicating intracellular Ca2+ concentration, remains unchanged. The delay to detect an increase in free intracellular Pb2+ (gtoreq30 nM) is much longer than the delay to Pb2+-induced exocytosis, indicating that cytoplasmic components buffer Pb2+ with high affinity. It is concluded that Pb2+ acts as a high-affinity substitute for Ca2+ to trigger essential steps leading to vesicular catecholamine release, which occurs when only apprx20% of the intracellular high-affinity binding capacity (apprx2 attomol/cell) is saturated with Pb2+.

L43 ANSWER 35 OF 82 MEDLINE on STN DUPLICATE 9

ACCESSION NUMBER: 2002739346 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12502892
TITLE: Immunolocalization of caveolin-1 and caveolin-3 in monkey skeletal, cardiac and uterine smooth muscles.
AUTHOR: Hagiwara Yasuko; Nishina Yasushi; Yorifuji Hiroshi; Kikuchi Tateki
CORPORATE SOURCE: Department of Animal Models for Human Disease, National Institute of Neuroscience, National Center of Neurology and Psychiatry, Tokyo, Japan.. hagiwara@ncnp.go.jp
SOURCE: Cell structure and function, (2002 Oct) 27 (5) 375-82. Journal code: 7608465. ISSN: 0386-7196.
PUB. COUNTRY: Japan
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200306
ENTRY DATE: Entered STN: 20021228
Last Updated on STN: 20030619
Entered Medline: 20030618

AB Caveolin, a 20-24 kDa integral membrane protein, is a **principal component** of caveolar domains. Caveolin-1 is expressed predominantly in endothelial cells, fibroblasts, and adipocytes, while the expression of caveolin-3 is confined to muscle cells. However, their localization in various muscles has not been well documented. Using double-immunofluorescence labeling and confocal **laser microscopy**, we examined the localization of caveolins-1 and 3 in adult monkey skeletal, cardiac and uterine smooth muscles and the co-immunolocalization of these caveolins with dystrophin, which is a product of the Duchenne muscular dystrophy gene. In the skeletal muscle tissue, caveolin-3 was localized along the sarcolemma except for the transverse tubules, and co-immunolocalized with dystrophin, whereas caveolin-1 was absent except in the blood vessels of the muscle tissue. In cardiac muscle cells, caveolins-1 and -3 and dystrophin were co-immunolocalized on the sarcolemma and transverse tubules. In uterine smooth muscle cells, caveolin-1, but not caveolin-3, was co-immunolocalized with dystrophin on the sarcolemma.

L43 ANSWER 36 OF 82 MEDLINE on STN DUPLICATE 10
ACCESSION NUMBER: 2002221726 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11958369
TITLE: Abnormal endothelial tight junctions in active lesions and normal-appearing white matter in multiple sclerosis.
AUTHOR: Plumb Jonnie; McQuaid Stephen; Mirakhur Meenakshi; Kirk John
CORPORATE SOURCE: Neuropathology Laboratory, Royal Group of Hospitals Trust, Belfast, Northern Ireland, United Kingdom.
SOURCE: Brain pathology (Zurich, Switzerland), (2002 Apr) 12 (2) 154-69. Journal code: 9216781. ISSN: 1015-6305.
PUB. COUNTRY: Switzerland
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200210
ENTRY DATE: Entered STN: 20020418
Last Updated on STN: 20021012
Entered Medline: 20021011

AB Blood-brain barrier (BBB) breakdown, demonstrable in vivo by enhanced MRI is characteristic of new and expanding inflammatory lesions in

relapsing-remitting and chronic progressive multiple sclerosis (MS). Subtle leakage may also occur in primary progressive MS. However, the anatomical route(s) of BBB leakage have not been demonstrated. We investigated the possible involvement of interendothelial tight junctions (TJ) by examining the expression of TJ proteins (occludin and ZO-1) in blood vessels in active MS lesions from 8 cases of MS and in normal-appearing white (NAWM) matter from 6 cases. Blood vessels (10-50 per frozen section) were scanned using confocal **laser** scanning **microscopy** to acquire datasets for analysis. TJ abnormalities manifested as beading, interruption, absence or diffuse cytoplasmic localization of **fluorescence**, or **separation** of junctions (putative opening) were frequent (affecting 40% of vessels) in oil-red-O-positive active plaques but less frequent in NAWM (15%), and in normal (< 2%) and neurological controls (6%). Putatively "open" junctions were seen in vessels in active lesions and in microscopically inflamed vessels in NAWM. Dual fluorescence revealed abnormal TJs in vessels with pre-mortem serum protein leakage. Abnormal or open TJs, associated with inflammation may **contribute** to BBB leakage in enhancing MRI lesions and may also be involved in subtle leakage in non-enhancing focal and diffuse lesions in NAWM. BBB disruption due to tight junctional pathology should be regarded as a significant form of tissue injury in MS, alongside demyelination and axonopathy.

L43 ANSWER 37 OF 82 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation on STN

ACCESSION NUMBER: 2002:65457 SCISEARCH
THE GENUINE ARTICLE: 511DZ
TITLE: Molecular brightness characterization of EGFP in vivo by fluorescence fluctuation spectroscopy
AUTHOR: Chen Y (Reprint); Muller J D; Ruan Q Q; Gratton E
CORPORATE SOURCE: Univ Minnesota, Dept Phys, 116 Church St SE, Minneapolis, MN 55455 USA (Reprint); Univ Illinois, Dept Phys, Urbana, IL 61801 USA
COUNTRY OF AUTHOR: USA
SOURCE: BIOPHYSICAL JOURNAL, (JAN 2002) Vol. 82, No. 1, pp. 133-144.
Publisher: BIOPHYSICAL SOCIETY, 9650 ROCKVILLE PIKE, BETHESDA, MD 20814-3998 USA.
ISSN: 0006-3495.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 61

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We characterize the molecular properties of autofluorescence and transiently expressed EGFP in the nucleus and in the cytoplasm of HeLa **cells** by fluorescence correlation spectroscopy (FCS) and by photon counting histogram (PCH) analysis. PCH has been characterized and applied in vitro, but its potential for in vivo studies needs to be explored. Thus, this study mainly focuses on the characterization of PCH analysis in vivo. The strength of PCH lies in its ability to distinguish biomolecules by their molecular brightness value. Because the concept of molecular brightness is crucial for PCH analysis, we study the molecular brightness of EGFP and determine the statistical accuracy of its measurement under in vivo conditions. We started by characterizing the influence of autofluorescence on EGFP measurements. We found a molecular brightness of EGFP that is a factor of 10 higher than the brightness of the autofluorescence. Moment analysis demonstrates that the **contribution** of autofluorescence, to **fluorescence** fluctuation experiments is negligible at EGFP concentrations of one

protein per excitation volume. The molecular brightness of EGFP measured in the nucleus, the cytoplasm, and in vitro are identical and our study demonstrates that molecular brightness is a very stable and predictable quantity for **cellular** measurements. In addition to PCH, we also analyzed the autocorrelation function of EGFP. The diffusion coefficient of EGFP is a factor of 3 lower in vivo than compared to in vitro, and a simple diffusion process describes the autocorrelation function. We found that in the nucleus the fluorescence intensity is stable as a function of time, while measurements in the cytoplasm display fluorescence intensity drifts that complicate the data analysis. We introduce and discuss an analysis method that minimizes the influence of the intensity drifts on PCH analysis. This method allows us to recover the correct molecular brightness of EGFP even in the presence of drifts of the fluorescence intensity signal. We found the molecular brightness of EGFP to be a very robust parameter, and anticipate the use of PCH analysis for the study of oligomerization processes in vivo.

L43 ANSWER 38 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:799338 HCAPLUS
DOCUMENT NUMBER: 138:381479
TITLE: Sensitive imaging of spectrally overlapping fluorochromes using the LSM 510 META
AUTHOR(S): Dickinson, Mary E.; Waters, Christopher W.; Bearman, Gregory H.; Wolleschensky, Ralf; Tille, Sebastian; Fraser, Scott E.
CORPORATE SOURCE: Biological Imaging Center, Beckman Institute, California Inst. Technology, Pasadena, CA, 91125, USA
SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (2002), 4620(Multiphoton Microscopy in the Biomedical Sciences II), 123-136
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Multi-color fluorescence microscopy has become a popular way to discriminate between multiple proteins, organelles or functions in a single cell or animal and can be used to approx. the phys. relationships between individual proteins within the cell, for instance, by using Fluorescence Resonance Energy Transfer (FRET). However, as researchers attempt to gain more information from single samples by using multiple dyes or fluorescent proteins (FPs), spectral overlap between emission signals can obscure the data. Signal separation using glass filters is often impractical for many dye combinations. In cases where there is extensive overlap between fluorochromes, separation is often phys. impossible or can only be achieved by sacrificing signal intensity. Here the authors test the performance of a new, integrated laser scanning system for multi-spectral imaging, the Zeiss LSM 510 META. This system consists of a sensitive multispectral imager and online **linear unmixing** functions integrated into the system software. Below we describe the design of the META device and show results from tests of the **linear unmixing** expts. using fluorochromes with overlapping emission spectra. These studies show that it is possible to expand the number of dyes used in multicolor applications.
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 39 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:111873 HCAPLUS
DOCUMENT NUMBER: 137:275136

TITLE: **Acousto-optic** tunable **filters** improve **optical** microscopy
AUTHOR(S): Spring, Kenneth R.
CORPORATE SOURCE: Section on Transport Physiology, National Heart, Lung and Blood Institute, National Institutes of Health, Bethesda, MD, 20892, USA
SOURCE: Laser Focus World (2002), 38(1), 123,125-126,129
CODEN: LFWOE8; ISSN: 1043-8092
PUBLISHER: PennWell Publishing Co.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB **Acousto-optic** tunable **filters** (AOTFs) play an increasingly essential role in modern optical microscopy. In an AOTF used for microscopy, a piezoelec. transducer bonded to a crystal of tellurium dioxide or quartz generates a high-frequency acoustic wave that alters the refractive index of the crystal in a periodic pattern to diffract an orthogonal beam of polarized, collimated light incident at the Bragg angle with high efficiency into the first order beam. The advantages of the AOTF for **microscopy** are manifested with a **laser** light source in a confocal **microscope**, and when combined with a digital signal processor, up to six different wavelengths can be diffracted simultaneously, each at an individually controlled power level. Such features translate into a variety of useful tools in the **laser**-scanning confocal **microscope** since the intensity of illumination or the wavelength on a pixel-by-pixel basis can be varied while maintaining a high scan rate. The fluorescence recovery after photobleaching (FRAP), a light-based microscopic approach, has considerably benefited from the introduction of the AOTF. Since AOTF enables bleaching of lines or irregular shapes, the marking of regions of membranes or cellular organelles and observing the motion of the fluorescent species in that region become possible.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 40 OF 82 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation on STN
ACCESSION NUMBER: 2002:95599 SCISEARCH
THE GENUINE ARTICLE: 514AY
TITLE: **Acousto-optic** tunable **filters** improve **optical** microscopy
AUTHOR: Spring K R (Reprint)
CORPORATE SOURCE: NHLBI, Sect Transport Physiol, NIH, 10 Ctr Dr, Bethesda, MD 20892 USA (Reprint); NHLBI, Sect Transport Physiol, NIH, Bethesda, MD 20892 USA
COUNTRY OF AUTHOR: USA
SOURCE: LASER FOCUS WORLD, (JAN 2002) Vol. 38, No. 1, pp. 123-+. Publisher: PENNWELL PUBL CO, 98 SPIT BROOK RD, NASHUA, NH 03062-2801 USA.
ISSN: 0740-2511.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 3
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Used with a **laser**-scanning confocal **microscope**, an **acousto-optic** tunable **filter** selects wavelengths and specific field regions for illumination.

L43 ANSWER 41 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 11
ACCESSION NUMBER: 2002:358244 HCAPLUS

DOCUMENT NUMBER: 139:32679
TITLE: Simultaneous decomposition of multivariate images using three-way data analysis Application to the comparison of cereal grains by confocal **laser** scanning **microscopy**
AUTHOR(S): Courcoux, Philippe; Devaux, Marie-Francoise; Bouchet, Brigitte
CORPORATE SOURCE: Unite de Sensometrie et Chimiometrie, ENITIAA/INRA, Nantes, 44322, Fr.
SOURCE: Chemometrics and Intelligent Laboratory Systems (2002), 62(2), 103-113
CODEN: CILSEN; ISSN: 0169-7439
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB We present a three-way data anal. method adapted to compare multispectral images such as those acquired by **fluorescence** microscopy. Spectral images are multivariate and can be considered as sets of pixels for which different spectral intensities have been measured. The algorithm proposed is based on the simultaneous decomposition of the covariance matrixes calculated, in the present work, for **fluorescence** variables. This method allows the extraction of components common to each image and reveals their specificities by means of sp. wt.s. The technique is illustrated by the anal. of microscopic image sequences acquired for five varieties of wheat and barely grains in 19 **fluorescence** conditions. The method made it possible to compare the **fluorescence** behaviors observed in the images and the strong similarities of the external tissues for the five cereals were highlighted.
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 42 OF 82 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
ACCESSION NUMBER: 2003:324635 BIOSIS
DOCUMENT NUMBER: PREV200300324635
TITLE: TWO - PHOTON TIME - RESOLVED REDOX FLUORESCENCE OF NATIVE NADH IN ACUTE HIPPOCAMPAL SLICES: PROBING UNCERTAINTY IN METABOLIC ACTIVITY.
AUTHOR(S): Vishwasrao, H. D. [Reprint Author]; Heikal, A. A. [Reprint Author]; Kasischke, K. A. [Reprint Author]; Webb, W. W. [Reprint Author]
CORPORATE SOURCE: Applied and Engineering Physics, Cornell University, Ithaca, NY, USA
SOURCE: Society for Neuroscience Abstract Viewer and Itinerary Planner, (2002) Vol. 2002, pp. Abstract No. 581.2. http://sfn.scholarone.com. cd-rom.
Meeting Info.: 32nd Annual Meeting of the Society for Neuroscience. Orlando, Florida, USA. November 02-07, 2002. Society for Neuroscience.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
Conference; (Meeting Poster)
LANGUAGE: English
ENTRY DATE: Entered STN: 16 Jul 2003
Last Updated on STN: 16 Jul 2003
AB Recently, we have utilized **two-photon** (2P) redox fluorescence **microscopy** of intrinsic NADH fluorescence for the functional imaging of metabolic state in native brain tissue. Inhibition

of the mitochondrial respiratory chain enhanced the **cellular** intrinsic fluorescence, attributable to an increase in the NADH concentration. However, viscosity and enzyme binding also influence the fluorescence properties (including quantum yield) of NADH. It is therefore essential to discriminate between concentration and micro-environmental effects on NADH fluorescence for the quantitative analysis of metabolic activity in living tissue.) Here, we investigate the effects of metabolic inhibition on the excited state dynamics of the intrinsic fluorescence in acute hippocampal slices using time-resolved 2P-fluorescence with apprx10 ps temporal resolution.) The intrinsic fluorescence in normoxic slices decays as a triple exponential with an average lifetime (and therefore quantum yield) 2.70.5 times greater than that of the double exponential of free NADH in aqueous solution. The slow decay component (apprx2.5 ns) is attributed to enzyme-bound NADH and **contributes** 732 % of the total **fluorescence**. Metabolic inhibition increased the total **fluorescence** as well as the **contributions** of the fast (by up to 90%) and slow (by up to 35%) decay components. This result implies an increase in the free/bound ratio of NADH upon metabolic inhibition, which complicates the calibration of the NADH fluorescence. Preliminary results of the rotational mobility of the intrinsic fluorescence emitters support the same conclusion.

L43 ANSWER 43 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2001-168746 [17] WPIDS
DOC. NO. NON-CPI: N2001-121675
DOC. NO. CPI: C2001-050437
TITLE: **Cellular activity** monitoring system comprises **laser microscope**, spectral analyzer, and array of detectors.
DERWENT CLASS: B04 D16 S03 T01
INVENTOR(S): **BEARMAN, G H; FRASER, S E; LANSFORD, R D**
PATENT ASSIGNEE(S): (CALY) CALIFORNIA INST OF TECHNOLOGY
COUNTRY COUNT: 26
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2001009592	A1	20010208	(200117)*	EN	22
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
EP 1203218	A1	20020508	(200238)	EN	
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI					
US 6403332	B1	20020611	(200244)		
US 2002146682	A1	20021010	(200269)		
US 6750036	B2	20040615	(200439)		
US 2004191758	A1	20040930	(200465)		

APPLICATION DETAILS:

PATENT NO	KIND		APPLICATION	DATE
WO 2001009592	A1		WO 2000-US20591	20000728
EP 1203218	A1		EP 2000-950844	20000728
			WO 2000-US20591	20000728
US 6403332	B1	Provisional	US 1999-146490P	19990730
		Provisional	US 1999-164504P	19991109
			US 2000-628219	20000728
US 2002146682	A1	Provisional	US 1999-146490P	19990730

		Provisional	US 1999-164504P	19991109
		Cont of	US 2000-628219	20000728
			US 2002-159703	20020528
US 6750036	B2	Provisional	US 1999-146490P	19990730
		Provisional	US 1999-164504P	19991109
		Cont of	US 2000-628219	20000728
			US 2002-159703	20020528
US 2004191758	A1	Provisional	US 1999-146490P	19990730
		Provisional	US 1999-164504P	19991109
		Cont of	US 2000-628219	20000728
		Cont of	US 2002-159703	20020528
			US 2004-817297	20040402

FILING DETAILS:

PATENT NO	KIND		PATENT NO
EP 1203218	A1	Based on	WO 2001009592
US 2002146682	A1	Cont of	US 6403332
US 6750036	B2	Cont of	US 6403332
US 2004191758	A1	Cont of	US 6403332
		Cont of	US 6750036

PRIORITY APPLN. INFO: US 1999-164504P 19991109; US 1999-146490P 19990730; US 2000-628219 20000728; US 2002-159703 20020528; US 2004-817297 20040402

AN 2001-168746 [17] WPIDS

AB WO 200109592 A UPAB: 20010328

NOVELTY - A **cellular activity** monitoring system (50), comprising a **laser microscope** (14) for exciting markers in a region of specimen (12) and radiating **fluorescence**, is new. A spectral analyzer **separates** the radiated **fluorescence** into wavelength bands, and an array of detectors detects the **fluorescence**. Each detector (54) collects the respective bands and generates a corresponding signal.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) monitoring **cellular activity** in a specimen, comprising:

(a) applying different **excitable markers** to the specimen;

(b) applying light to the specimen from a **multi-photon laser microscope** to excite a region of the specimen and cause **fluorescence** to be radiated from the region by the markers in that region;

(c) **separating** the **fluorescence** into wavelength bands using a spectral analyzer; and

(d) detecting the **fluorescence** through an array of detector, each receiving one of the wavelength bands and generating a corresponding signal;

(2) a system for monitoring **cellular activity** in a specimen containing **excitable markers**, comprising:

(a) a **laser microscope** that excites the markers in a region of the specimen, causing the markers to **fluoresce**;

(b) a **tunable filter** that processes the **fluorescence** and passes a portion of it which is within a wavelength band that depends on the **filter**; and

(c) a detector that receives the processed **fluorescence** and converts it into a signal; and

(3) monitoring **cellular activity** in a specimen, comprising:

(a) applying different **excitable markers** to the specimen;

(b) focusing light from a **laser microscope** on a region of the specimen to excite the **markers** and cause **fluorescence**;

(c) **separating** the **fluorescence** into wavelength bands;

(d) detecting the **fluorescence** through an array of detectors which each receive one of the wavelength bands and generate a signal; and

(e) processing the signal from the detector to calculate the quantity of each marker in the region.

USE - For monitoring **cellular activity** in a **cellular** specimen.

ADVANTAGE - The system efficiently and reliably monitors the emission spectra of **fluorescent** probes.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic diagram of a **cellular activity** monitoring system.

Specimen 12

Laser microscope 14

Deflector 20

Cellular activity monitoring system 50

Tunable filter 52

Detector 54

Dwg.3/7

L43 ANSWER 44 OF 82 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN

ACCESSION NUMBER: 2001:477610 BIOSIS
DOCUMENT NUMBER: PREV200100477610
TITLE: Differential response of size-fractionated soil bacteria in BIOLOG(R) microtitre plates.
AUTHOR(S): De Fede, Krista L.; Sexstone, Alan J. [Reprint author]
CORPORATE SOURCE: Division of Plant and Soil Sciences, West Virginia University, 401 Brooks Hall, Morgantown, WV, 26506-6057, USA
asexston@wvu.edu
SOURCE: Soil Biology and Biochemistry, (September, 2001) Vol. 33, No. 11, pp. 1547-1554. print.
CODEN: SBIOAH. ISSN: 0038-0717.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 10 Oct 2001
Last Updated on STN: 23 Feb 2002

AB The majority of bacterial cells in soil observed by **fluorescence** microscopy are less than 0.4 mum in diameter, yet these cells rarely are recovered on nutrient agar. Metabolically active bacteria that are not culturable on solid media might respond in BIOLOG(R) microtitre plates, which contain 95 different carbon substrates. In the present study, BIOLOG(R) GN and GP microtitre plates were used to compare functional diversity of large (>0.45 mum) and small (<0.45 mum) cells within A and B horizons of cultivated and forested site situated on a single soil taxon (Guernsey silt-loam; fine, mixed mesic, Aquic Hapludalfs). Overall, the cultivated site exhibited greater substrate richness and average well color development compared to the forested site. The small cell fraction

was numerically greater at both sites, yet exhibited limited substrate utilization compared with large cells. Greater substrate utilization by small cells was evident in A compared with B horizons at both sites. **Principal component** analysis separated the bacterial community by size and horizon at each study site. Small cells primarily utilized carbohydrates and carboxylic acids, compared to a broad range of substrate utilization by large cells. These data suggest that small cells are metabolically distinct from large cells. Small cells in the B horizon may be metabolically dormant and/or physiologically distinct from those in A horizon soils.

L43 ANSWER 45 OF 82 MEDLINE on STN DUPLICATE 12
ACCESSION NUMBER: 2002041780 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11768655
TITLE: Multi-spectral imaging and **linear unmixing** add a whole new dimension to **laser** scanning fluorescence **microscopy**.
AUTHOR: Dickinson M E; Bearman G; Tille S; Lansford R; Fraser S E
CORPORATE SOURCE: Biological Imaging Center, Beckman Institute, California Institute of Technology, Pasadena 91125, USA.. maryd@gg.caltech.edu
SOURCE: BioTechniques, (2001 Dec) 31 (6) 1272, 1274-6, 1278. Ref: 6
Journal code: 8306785. ISSN: 0736-6205.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, TUTORIAL)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200205
ENTRY DATE: Entered STN: 20020124
Last Updated on STN: 20020531
Entered Medline: 20020530

L43 ANSWER 46 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:909603 HCAPLUS
DOCUMENT NUMBER: 136:179909
TITLE: Multi-spectral imaging and **linear unmixing** add a whole new dimension to **laser** scanning fluorescence **microscopy**
AUTHOR(S): Dickinson, M. E.; Bearman, G.; Tille, S.; Lansford, R.; Fraser, S. E.
CORPORATE SOURCE: Biological Imaging Ctr., Beckman Institute, MC 139-74, California Institute of Technology, Pasadena, CA, 91125, USA
SOURCE: BioTechniques (2001), 31(6), 1272, 1274-1276, 1278
CODEN: BTNQDO; ISSN: 0736-6205
PUBLISHER: Eaton Publishing Co.
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review of the various approaches that have been used to enhance the spectral resolution in fluorescence microscopy. The incorporation of the multi-fluorescence imaging technique into an easy-to-use, com. available system has resulted in greater flexibility for many different applications in biomedical research. The use of more probes in a single experiment as well as the use of dyes and fluorescent protein constructs that were once unusable has now been made possible.
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 47 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:4787 HCAPLUS
DOCUMENT NUMBER: 134:157013
TITLE: Multispectral Imaging Microscope with Millisecond Time Resolution
AUTHOR(S): Khait, Oleg; Smirnov, Sergey; Tran, Chieu D.
CORPORATE SOURCE: Department of Chemistry, Marquette University, Milwaukee, WI, 53201, USA
SOURCE: Analytical Chemistry (2001), 73(4), 732-739
CODEN: ANCHAM; ISSN: 0003-2700
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A new multispectral imaging microscope with micrometer spatial resolution and millisecond temporal resolution was developed. The imaging microscope is based on the use of an **acousto-optic** tunable **filter** (AOTF) for spectral tuning and a progressive scan camera capable of snapshot operation for recording. It can operate in two modes: images are recorded as a function of time or wavelength. When operated as a function of time, the microscope is configured so that as many images as possible are recorded, grabbed, and stored per one wavelength. Upon completion, the AOTF is scanned to a new wavelength, and a new set of images are recorded. Up to 33 images/s (i.e., 30 ms/image) can be recorded in this mode. In the other configuration, the recording wavelength is rapidly scanned (by the AOTF) and only one image is rapidly recorded, grabbed, and stored for each wavelength. Because addnl. time is needed to scan the AOTF, the maximum number of images can be grabbed in this case is 16 frames/s. Preliminary applications of the imaging microscope include measurements of photoinduced changes of a single unit cell in temperature-sensitive cholesteric liquid crystals as a function of time and wavelength. The changes are varied with time and wavelength. Interestingly, the photoinduced changes of unit cells in the liquid crystal are not the same but different from cell to cell. This imaging microscope is particularly useful for measurements of small-size samples that undergo rapid chemical or biochem. reactions, e.g., activities of a single biol. cell.
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 48 OF 82 MEDLINE on STN DUPLICATE 13
ACCESSION NUMBER: 2001471494 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11516321
TITLE: Resolution of multiple green fluorescent protein color variants and dyes using **two-photon microscopy** and imaging spectroscopy.
AUTHOR: **Lansford R; Bearman G; Fraser S E**
CORPORATE SOURCE: California Institute of Technology, Biological Imaging Center, Beckman Institute, Division of Biology, 139-74 Pasadena, California 91125, USA.. rusty@gg.caltech.edu
SOURCE: Journal of biomedical optics, (2001 Jul) 6 (3) 311-8.
Journal code: 9605853. ISSN: 1083-3668.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200109

ENTRY DATE: Entered STN: 20010823
Last Updated on STN: 20010924
Entered Medline: 20010920

AB The imaging of living cells and tissues using **laser**-scanning **microscopy** is offering dramatic insights into the spatial and temporal controls of biological processes. The availability of genetically encoded **labels** such as green **fluorescent** protein (GFP) offers unique opportunities by which to trace cell movements, cell signaling or gene expression dynamically in developing embryos. **Two-photon laser** scanning **microscopy** (TPLSM) is ideally suited to imaging cells in vivo due to its deeper tissue penetration and reduced phototoxicity; however, in TPLSM the excitation and emission spectra of GFP and its color variants [e.g., CyanFP (CFP); yellowFP (YFP)] are insufficiently distinct to be uniquely imaged by conventional means. To surmount such difficulties, we have combined the technologies of TPLSM and imaging spectroscopy to unambiguously identify CFP, GFP, YFP, and redFP (RFP) as well as conventional dyes, and have tested the approach in cell lines. In our approach, a **liquid crystal tunable filter** was used to collect the emission spectrum of each pixel within the TPLSM image. Based on the fluorescent emission spectra, supervised classification and **linear unmixing** analysis algorithms were used to identify the nature and relative amounts of the fluorescent proteins expressed in the cells. In a most extreme case, we have used the approach to **separate** GFP and **fluorescein**, **separated** by only 7 nm, and appear somewhat indistinguishable by conventional techniques. This approach offers the needed ability to concurrently image multiple colored, spectrally overlapping marker proteins within living cells.

L43 ANSWER 49 OF 82 MEDLINE on STN DUPLICATE 14
ACCESSION NUMBER: 2001454541 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11500845
TITLE: Evaluation of confocal microscopy system performance.
AUTHOR: Zucker R M; Price O
CORPORATE SOURCE: Reproductive Toxicology Division, National Health and Environmental Effects Research Laboratory, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, USA.. zucker.robert@epa.gov
SOURCE: Cytometry : journal of the Society for Analytical Cytology, (2001 Aug 1) 44 (4) 273-94.
Journal code: 8102328. ISSN: 0196-4763.
PUB. COUNTRY: United States
DOCUMENT TYPE: (EVALUATION STUDIES)
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200110
ENTRY DATE: Entered STN: 20010814
Last Updated on STN: 20011022
Entered Medline: 20011018

AB BACKGROUND: The confocal **laser** scanning **microscope** (CLSM) has been used by scientists to visualize three-dimensional (3D) biological samples. Although this system involves lasers, electronics, optics, and microscopes, there are few published tests that can be used to assess the performance of this equipment. Usually the CLSM is assessed by subjectively evaluating a biological/histological test slide for image quality. Although there is a use for the test slide, there are many other components in the CLSM that need to be assessed. It would be useful if

tests existed that produced reference values for machine performance. The aim of this research was to develop quality assurance tests to ensure that the CLSM was stable while delivering reproducible intensity measurements with excellent image quality. METHODS: Our ultimate research objective was to quantify fluorescence using a CLSM. To achieve this goal, it is essential that the CLSM be stable while delivering known parameters of performance. Using Leica TCS-SP1 and TCS-4D systems, a number of tests have been devised to evaluate equipment performance. Tests measuring dichroic reflectivity, field illumination, lens performance, laser power output, spectral registration, axial resolution, laser stability, photomultiplier tube (PMT) reliability, and system noise were either incorporated from the literature or derived in our laboratory to measure performance. These tests are also applicable to other manufacturer's systems with minor modifications. RESULTS: A preliminary report from our laboratory has addressed a number of the QA issues necessary to achieve CLSM performance. This report extends our initial work on the evaluation of CLSM system performance. Tests that were described previously have been modified and new tests involved in laser stability and sensitivity are described. The QA tests on the CLSM measured laser power, PMT function, dichroic reflection, spectral registration, axial registration, system noise and sensitivity, lens performance, and laser stability. Laser power stability varied between 3% and 30% due to various factors, which may include incompatibility of the fiber-optic polarization with laser polarization, thermal instability of the **acoustical optical** transmission **filter** (AOTF), and laser noise.
The sensitivity of the system was measured using a 10-microm Spherotech bead and the PMTs were assessed with the CV concept (image noise). The maximum sensitivity obtainable on our TCS-SP1 system measured on the 10-microm Spherotech beads was approximately 4% for 488 nm, 2.5% for 568 nm, 20% for 647 nm, and 19% for 365 nm laser light. The values serve as a comparison to test machine sensitivity from the same or different manufacturers. CONCLUSIONS: QA tests are described on the CLSM to assess performance and ensure that reproducing data are obtained. It is suggested strongly that these tests be used in place of a biological/histological sample to evaluate system performance. The tests are more specific and can recognize instrument functionality and problems better than a biological/histological sample. Utilization of this testing approach will eliminate the subjective assessment of the CLSM and may allow the data from different machines to be compared. These tests are essential if one is interested in making intensity measurements on experimental samples as well as obtaining the best signal detection and image resolution from a CLSM. Published 2001 Wiley-Liss, Inc.

L43 ANSWER 50 OF 82 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 2001288948 EMBASE
TITLE: Evaluation of confocal microscopy system performance.
AUTHOR: Zucker R.M.; Price O.
CORPORATE SOURCE: R.M. Zucker, U.S. Environmental Protection Agency, Repro. Toxicology Division (MD-72), National Health Research Laboratory, Research Triangle Park, NC 27711, United States. zucker.robert@epa.gov
SOURCE: Communications in Clinical Cytometry, (1 Aug 2001) Vol. 46, No. 4, pp. 273-294.
Refs: 26
ISSN: 0196-4763 CODEN: CCCYEM
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 005 General Pathology and Pathological Anatomy

027 Biophysics, Bioengineering and Medical Instrumentation

LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 20010830
Last Updated on STN: 20010830

AB Background: The confocal **laser** scanning **microscope** (CLSM) has been used by scientists to visualize three-dimensional (3D) biological samples. Although this system involves lasers, electronics, optics, and microscopes, there are few published tests that can be used to assess the performance of this equipment. Usually the CLSM is assessed by subjectively evaluating a biological/histological test slide for image quality. Although there is a use for the test slide, there are many other components in the CLSM that need to be assessed. It would be useful if tests existed that produced reference values for machine performance. The aim of this research was to develop quality assurance tests to ensure that the CLSM was stable while delivering reproducible intensity measurements with excellent image quality. Methods: Our ultimate research objective was to quantify fluorescence using a CLSM. To achieve this goal, it is essential that the CLSM be stable while delivering known parameters of performance. Using Leica TCS-SPH and TCS-4D systems, a number of tests have been devised to evaluate equipment performance. Tests measuring dichroic reflectivity, field illumination, lens performance, laser power output, spectral registration, axial resolution, laser stability, photomultiplier tube (PMT) reliability, and system noise were either incorporated from the literature or derived in our laboratory to measure performance. These tests are also applicable to other manufacturer's systems with minor modifications. Results: A preliminary report from our laboratory has addressed a number of the QA issues necessary to achieve CLSM performance. This report extends our initial work on the evaluation of CLSM system performance. Tests that were described previously have been modified and new tests involved in laser stability, and sensitivity are described. The QA tests on the CLSM measured laser power, PMT function, dichroic reflection, spectral registration, axial registration, system noise and sensitivity, lens performance, and laser stability. Laser power stability varied between 3% and 30% due to various factors, which may include incompatibility of the fiber-optic polarization with laser polarization, thermal instability of the **acoustical optical** transmission **filter** (AOTF), and laser noise. The sensitivity of the system was measured using a 10-μm Spherotech bead and the PMTs were assessed with the CV concept (image noise). The maximum sensitivity obtainable on our TCS-SP1 system measured on the 10-μm Spherotech beads was approximately 4% for 488 nm, 2.5% for 568 nm, 20% for 647 nm, and 19% for 365 nm laser light. The values serve as a comparison to test machine sensitivity from the same or different manufacturers. Conclusions: QA tests are described on the CLSM to assess performance and ensure that reproducing data are obtained. It is suggested strongly that these tests be used in place of a biological/histological sample to evaluate system performance. The tests are more specific and can recognize instrument functionality and problems better than a biological/histological sample. Utilization of this testing approach will eliminate the subjective assessment of the CLSM and may allow the data from different machines to be compared. These tests are essential if one is interested in making intensity measurements on experimental samples as well as obtaining the best signal detection and image resolution from a CLSM.

L43 ANSWER 51 OF 82 EMBASE on STN

ACCESSION NUMBER: 2001310004 EMBASE
TITLE: Bivariate analysis of **cellular** DNA versus RNA content by laser scanning cytometry using the product of signal subtraction (differential **fluorescence**) as a **separate** parameter.
AUTHOR: Smolewski P.; Grabarek J.; Kamentsky L.A.; Darzynkiewicz Z.
CORPORATE SOURCE: Z. Darzynkiewicz, Brander Cancer Research Institute, 19 Bradhurst Avenue, Hawthorne, NY 10523, United States. darzynk@nymc.edu
SOURCE: Cytometry, (1 Sep 2001) Vol. 45, No. 1, pp. 73-78.
Refs: 26
ISSN: 0196-4763 CODEN: CYTODQ
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 001 Anatomy, Anthropology, Embryology and Histology
027 Biophysics, Bioengineering and Medical Instrumentation
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 20010920
Last Updated on STN: 20010920

AB Background: The cytometric methods of bivariate analysis of **cellular** RNA versus DNA content have limitations. The method based on the use of metachromatic fluorochrome acridine orange (AO) requires rigorous conditions of the equilibrium staining whereas pyronin Y and Hoechst 33342 necessitate the use of an instrument that provides two-laser excitation, including the ultraviolet (UV) light wavelength. Methods: Phytohemagglutinin (PHA)-stimulated human lymphocytes were deposited on microscope slides and fixed. DNA and double-stranded (ds) RNA were stained with propidium iodide (PI) and protein was stained with BODIPY 630/650-X or fluorescein isothiocyanate (FITC). **Cellular** fluorescence was measured with a laser scanning cytometer (LSC). The **cells** were treated with RNase A and their fluorescence was measured again. The file-merge feature of the LSC was used to record the **cell** PI fluorescence measurements prior to and after the RNase treatment in list mode, as a single file. The integrated PI fluorescence intensity of each **cell** after RNase treatment was subtracted from the fluorescence intensity of the same **cell** measured prior to RNase treatment. This RNase-specific differential value of fluorescence (differential fluorescence [DF]) was plotted against the **cell** fluorescence measured after RNase treatment or against the protein-associated BODIPY 630/650-X or FITC fluorescence. Results: The scattergrams were characteristic of the RNA versus DNA bivariate distributions where DF represented **cellular** ds RNA content and fluorescence intensity of the RNase-treated **cells**, their DNA content. The distributions were used to correlate **cellular** ds RNA content with the **cell** cycle position or with protein content. Conclusions: One advantage of this novel approach based on the recording and plotting of DF is that only the RNase -specific fraction of **cell fluorescence** is measured with no **contribution** of nonspecific components (e.g., due to the emission spectrum overlap or stainability of other than RNA **cell** constituents). Another advantage is the method's simplicity, which ensues from the use of a single dye, the same illumination, and the same emission wavelength detection sensor for measurement of both DNA and ds RNA. The method can be extended for multiparameter analysis of **cell** populations stained with other fluorochromes of the same-wavelength emission but targeted (e.g., immunocytochemically) for different **cell** constituents. .COPYRGT. 2001 Wiley-Liss, Inc.

L43 ANSWER 52 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2000-646867 [62] WPIDS
DOC. NO. NON-CPI: N2000-479391
TITLE: Light diffraction device for separating excitation and emission light in confocal **microscope** e.g. **laser** scanning **microscope**, uses at least one diffraction element for diffraction of selected wavelength of excitation light.
DERWENT CLASS: P81 S02 S03 V07 V08
INVENTOR(S): WOLLESCHENSKY, R
PATENT ASSIGNEE(S): (JENA) ZEISS JENA GMBH CARL
COUNTRY COUNT: 21
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2000037985	A2	20000629	(200062)*	GE	11
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
W: JP US					
DE 19859314	A1	20000629	(200062)		
DE 19936573	A1	20010208	(200109)		
EP 1141763	A1	20011010	(200167)	GE	
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE					
JP 2002533747	W	20021008	(200281)		19

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2000037985	A2	WO 1999-EP10262	19991222
DE 19859314	A1	DE 1998-1059314	19981222
DE 19936573	A1	DE 1999-1036573	19990803
EP 1141763	A1	EP 1999-964647	19991222
		WO 1999-EP10262	19991222
JP 2002533747	W	WO 1999-EP10262	19991222
		JP 2000-589988	19991222

FILING DETAILS:

PATENT NO	KIND	PATENT NO
DE 19936573	A1 Add to	DE 19859314
EP 1141763	A1 Based on	WO 2000037985
JP 2002533747	W Based on	WO 2000037985

PRIORITY APPLN. INFO: DE 1999-19936573 19990803; DE 1998-19859314 19981222

AN 2000-646867 [62] WPIDS
AB WO 200037985 A UPAB: 20001130
NOVELTY - The light diffraction device uses at least one light diffraction element, e.g. an **acousto-optical** tunable **filter** (AOTF), inserted in the light path of both the excitation and the emission beams in a confocal microscope, for selective diffraction of at least one selected wavelength of the excitation beam, the emission light passing through the diffraction element without being affected.
USE - Light diffraction device is used for separation of the excitation and emission light in a confocal **microscope**, e.g. a **laser** scanning **microscope**.

receptor activation. GABA(A) receptor functional **activity** can be measured in discrete **cells** located in neuroanatomically defined populations within areas such as the neocortex and hippocampus. Changes in intracellular Cl- can also be studied under various conditions such as oxygen/glucose deprivation (''in vitro ischemia'') and excitotoxicity, In such cases, changes in cell volume may also occur due to the dependence of cell volume regulation on Na+, K+, and Cl- flux. Because changes in cell volume can affect optical fluorescence measurements, we assess cell volume changes in the brain slice using the fluorescent indicator calcein-AM. Determination of changes in MEQ fluorescence versus calcein fluorescence allows one to distinguish between an increase in intracellular Cl- and an increase in cell volume. (C) 1999 Academic Press.

L43 ANSWER 58 OF 82 MEDLINE on STN DUPLICATE 17
ACCESSION NUMBER: 1999382292 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10451502
TITLE: Correlating cell cycle with metabolism in single cells: combination of image and metabolic cytometry.
AUTHOR: Krylov S N; Zhang Z; Chan N W; Arriaga E; Palcic M M; Dovichi N J
CORPORATE SOURCE: Department of Chemistry, University of Alberta, Edmonton, Alberta, Canada.
SOURCE: Cytometry : journal of the Society for Analytical Cytology, (1999 Sep 1) 37 (1) 14-20.
Journal code: 8102328. ISSN: 0196-4763.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199911
ENTRY DATE: Entered STN: 20000111
Last Updated on STN: 20000111
Entered Medline: 19991101

AB BACKGROUND: We coin two terms: First, chemical cytometry describes the use of high-sensitivity chemical analysis techniques to study single cells. Second, metabolic cytometry is a form of chemical cytometry that monitors a cascade of biosynthetic and biodegradation products generated in a single cell. In this paper, we describe the combination of metabolic cytometry with image cytometry to correlate oligosaccharide metabolic **activity** with **cell** cycle. We use this technique to measure DNA ploidy, the uptake of a fluorescent disaccharide, and the amount of metabolic products in a single cell. METHODS: A colon adenocarcinoma cell line (HT29) was incubated with a fluorescent disaccharide, which was taken up by the cells and converted into a series of biosynthetic and biodegradation products. The cells were also treated with YOYO-3 and Hoechst 33342. The YOYO-3 signal was used as a live-dead assay, while the Hoechst 33342 signal was used to estimate the ploidy of live cells by fluorescence image cytometry. After ploidy analysis, a cell was injected into a fused-silica capillary, where the cell was lysed. **Fluorescent** metabolic products were then **separated** by capillary electrophoresis and detected by laser-induced fluorescence. RESULTS: Substrate uptake measured with metabolic cytometry gave rise to results similar to those measured by use of **laser** scanning confocal **microscopy**. The DNA ploidy histogram obtained with our simple image cytometry technique was similar to that obtained using flow cytometry. The cells in the G(1) phase did not show any biosynthetic activity in respect to the substrate. Several groups of cells with unique biosynthetic patterns were distinguished within G(2)/M cells. CONCLUSIONS: This is the first report that combined metabolic and image

ADVANTAGE - The use of an **acousto-optical** tunable **filter** as the light diffraction element allows selection of the wavelength to be diffracted.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic representation of a **laser** scanning **microscope**.

Acousto-optical tunable **filter** used as diffraction element AOTF

Dwg.1/4

L43 ANSWER 53 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2001-055141 [07] WPIDS
DOC. NO. NON-CPI: N2001-042646
TITLE: **Laser** scan type **microscope** used in medical science, samples output of optical sensor based on computed time difference between deflected light of different wavelength from two micro mirror elements of mirror array.
DERWENT CLASS: P81 S03
PATENT ASSIGNEE(S): (OLYU) OLYMPUS OPTICAL CO LTD
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
JP 2000314839	A	20001114	(200107)*		11

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
JP 2000314839	A	JP 1999-124737	19990430

PRIORITY APPLN. INFO: JP 1999-124737 19990430
AN 2001-055141 [07] WPIDS
AB JP2000314839 A UPAB: 20010202

NOVELTY - A sample (8) is radiated by laser beam from light sources (14,15). A **prism** (22) which divides the **fluorescence** from sample into spectrums, is provided between sample and optical sensor (26). Time difference between deflected light of different wavelength from two micro mirror elements is computed by which sensor is sampled by signal processing apparatus (31).

DETAILED DESCRIPTION - Mirror array (24) with micro mirror elements (25), is provided between **prism** and sensor.

USE - For use in the field of medical science and biology to detect protein, gene which gave **fluorescent** labeling on organic tissue or cell.

ADVANTAGE - Exhibits high **fluorescent** detection sensitivity and high level position reproducibility without need of machine driver or interference **filter**. Enables obtaining high signal to noise ratio with a single optical detector.

DESCRIPTION OF DRAWING(S) - The figure shows **laser** scan type **microscope**.

Sample 8
Light sources 14,15
Prism 22
Mirror array 24
Micro mirror elements 25
Optical detector 26

,Signal processing apparatus 31
Dwg.1/9

L43 ANSWER 54 OF 82 MEDLINE on STN DUPLICATE 15
ACCESSION NUMBER: 2001302629 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11059482
TITLE: Use of green **fluorescent** protein color variants expressed on stable broad-host-range vectors to visualize rhizobia interacting with plants.
AUTHOR: Stuurman N; Pacios Bras C; Schlaman H R; Wijfjes A H; Bloemberg G; Spaink H P
CORPORATE SOURCE: Leiden University, Institute of Molecular Plant Sciences, The Netherlands.. stuurman@rulbim.leidenuniv.nl
SOURCE: Molecular plant-microbe interactions : MPMI, (2000 Nov) 13 (11) 1163-9.
Journal code: 9107902. ISSN: 0894-0282.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200105
ENTRY DATE: Entered STN: 20010604
Last Updated on STN: 20010604
Entered Medline: 20010531

AB We developed two sets of broad-host-range vectors that drive expression of the green **fluorescent** protein (GFP) or color variants thereof (henceforth collectively called autofluorescent proteins [AFPs]) from the lac promoter. These two sets are based on different replicons that are maintained in a stable fashion in Escherichia coli and rhizobia. Using specific **filter** sets or a dedicated confocal **laser** scanning **microscope** setup in which emitted light is split into its color components through a **prism**, we were able to unambiguously identify bacteria expressing enhanced cyan **fluorescent** protein (ECFP) or enhanced yellow **fluorescent** protein (EYFP) in mixtures of the two. Clearly, these vectors will be valuable tools for competition, cohabitation, and rescue studies and will also allow the visualization of interactions between genetically marked bacteria in vivo. Here, we used these vectors to visualize the interaction between rhizobia and plants. Specifically, we found that progeny from different rhizobia can be found in the same nodule or even in the same infection thread. We also visualized movements of bacteroids within plant nodule cells.

L43 ANSWER 55 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2000-043415 [04] WPIDS
DOC. NO. NON-CPI: N2000-032997
TITLE: Pattern defect inspection apparatus for **laser** **microscope** used for inspecting pattern defect of semiconductor wafer for LSI manufacture - has photodetector that receives light transmitted through specimen for several times, and defect detector that processes output signal of photodetector to detect pattern defect of specimen.
DERWENT CLASS: P81 S02 S03 U11
PATENT ASSIGNEE(S): (LASE-N) LASERTICK KK
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG

JP 11304715	A	19991105 (200004)*	11

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
JP 11304715	A	JP 1998-106191	19980416

PRIORITY APPLN. INFO: JP 1998-106191 19980416
AN 2000-043415 [04] WPIDS
AB JP 11304715 A UPAB: 20000124
NOVELTY - A stage drive unit drives the specimen stage in orthogonal direction. The light radiated from the objective lens (12) and transmitted through a specimen (9) for the second time is received by a photodetector (18) through an objective lens (8) and a beam deflection unit (3). A defect detector (20) processes the output signal of the photodetector and detects the pattern defect of the specimen. DETAILED DESCRIPTION - The beam deflection unit deflects the light beam from a light source (1), in a specified direction. The objective lens (8) projects the deflected light beam on the specimen. A mirror (7) directs the light beam towards the specimen. The objective lens (12) collects the light beam from the mirror such that the light beam is projected again on the specimen.
USE - For inspecting pattern defects of semiconductor wafer used in LSI manufacture.
ADVANTAGE - Pattern defects are inspected with high resolution. Enables accurate detection of even minute defects using suitable photomask, **liquid crystal** panel or color **filter**. DESCRIPTION OF DRAWING(S) - The figure illustrates the composition of pattern defect inspection apparatus. (1) Light source; (3) Beam deflection unit; (7) Mirror; (8,12) Objective lens; (9) Specimen; (12) Objective lens; (18) Photodetector; (20) Defect detector.
Dwg.1/5

L43 ANSWER 56 OF 82 MEDLINE on STN DUPLICATE 16
ACCESSION NUMBER: 1999437860 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10508101
TITLE: Green fluorescent protein-marked Pseudomonas fluorescens: localization, viability, and activity in the natural barley rhizosphere.
AUTHOR: Normander B; Hendriksen N B; Nybroe O
CORPORATE SOURCE: Department of Marine Ecology and Microbiology, National Environmental Research Institute, DK-4000 Roskilde, Denmark.. bn@dmu.dk
SOURCE: Applied and environmental microbiology, (1999 Oct) 65 (10) 4646-51.
Journal code: 7605801. ISSN: 0099-2240.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199911
ENTRY DATE: Entered STN: 20000111
Last Updated on STN: 20000111
Entered Medline: 19991101
AB The gfp-tagged Pseudomonas fluorescens biocontrol strain DR54-BN14 was introduced into the barley rhizosphere. Confocal **laser** scanning **microscopy** revealed that the rhizoplane populations of DR54-BN14

on 3- to 14-day-old roots were able to form microcolonies closely associated with the indigenous bacteria and that a majority of DR54-BN14 cells appeared small and almost coccoid. Information on the viability of the inoculant was provided by a microcolony assay, while measurements of cell volume, the intensity of green **fluorescent** protein **fluorescence**, and the **ratio** of dividing cells to total cells were used as indicators of **cellular activity**. At a soil moisture close to the water-holding capacity of the soil, the activity parameters suggested that the majority of DR54-BN14 cells were starving in the rhizosphere. Nevertheless, approximately 80% of the population was either culturable or viable but nonculturable during the 3-week incubation period. No impact of root decay on viability was observed, and differences in viability or **activity** among DR54-BN14 **cells** located in different regions of the root were not apparent. In dry soil, however, the nonviable state of DR54-BN14 was predominant, suggesting that desiccation is an important abiotic regulator of cell viability.

L43 ANSWER 57 OF 82 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation on STN

ACCESSION NUMBER: 1999:500342 SCISEARCH
THE GENUINE ARTICLE: 209JQ
TITLE: Fluorescence imaging of changes in intracellular chloride in living brain slices
AUTHOR: Inglefield J R; SchwartzBloom R D (Reprint)
CORPORATE SOURCE: DUKE UNIV, MED CTR, DEPT PHARMACOL & CANC BIOL, BOX 3813, DURHAM, NC 27710 (Reprint); DUKE UNIV, MED CTR, DEPT PHARMACOL & CANC BIOL, DURHAM, NC 27710
COUNTRY OF AUTHOR: USA
SOURCE: METHODS-A COMPANION TO METHODS IN ENZYMOLOGY, (JUN 1999) Vol. 18, No. 2, pp. 197-203.
Publisher: ACADEMIC PRESS INC, 525 B ST, STE 1900, SAN DIEGO, CA 92101-4495.
ISSN: 1046-2023.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 26

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB In brain slice preparations, chloride movements across the cell membrane of living cells are measured traditionally with Cl-36(-) tracer methods, Cl--selective microelectrodes, or whole-cell recording using patch clamp analysis. We have developed an alternative, noinvasive technique that uses the fluorescent Cl- ion indicator, 6-methoxy-N-ethylquinolinium iodide (MEQ), to study changes in intracellular Cl- by epifluorescence or UV **laser** scanning confocal **microscopy**. In brain slices taken from rodents younger than 22 days of age, excellent cellular loading is achieved with the membrane-permeable form of the dye, dihydro-MEQ. Subsequent intracellular oxidation of dihydro-MEQ to the Cl--sensitive MEQ traps the polar form of the dye inside the neurons. Because MEQ is a single-excitation and single-emission dye, changes in intracellular Cl- concentrations can be calibrated from the Stern-Volmer relationship, determined in **separate** experiments. Using MEQ as the **fluorescent** indicator for Cl-, Cl- flux through the gamma-aminobutyric acid (GABA)-gated Cl- channel (GABA(A) receptor) can be studied by dynamic video imaging and either nonconfocal (epifluorescence) or confocal microscopy in the acute brain slice preparation. Increases in intracellular Cl- quench MEQ fluorescence, thereby reflecting GABA(A)

cytometry to correlate formation of metabolic products with cell cycle. A complete enzymatic cascade is monitored on a cell-by-cell basis and correlated with cell cycle.
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L43 ANSWER 59 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 1998-336999 [30] WPIDS
DOC. NO. NON-CPI: N1998-263211
TITLE: Pattern defect detection method for colour **filter** of **liquid crystal** display device - involves passing several light beams through first slit pattern, to second pattern whose defect is to be inspected.
DERWENT CLASS: P81 S02 S03
PATENT ASSIGNEE(S): (MATU) MATSUSHITA DENKI SANGYO KK
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
JP 10123015	A	19980515	(199830)*		6

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
JP 10123015	A	JP 1996-275627	19961018

PRIORITY APPLN. INFO: JP 1996-275627 19961018
AN 1998-336999 [30] WPIDS
AB JP 10123015 A UPAB: 19980730
The method involves arranging a first slit pattern (4) having a predetermined shape, on a second pattern (2) of specific shape. Several light beams are passed through the first slit pattern to the second pattern for detecting defect in the second pattern. The light beams are incident only on the second pattern and not on the area (7) adjacent to the second pattern.
ADVANTAGE - Avoids use of expensive inspection apparatus. Avoids damage to equipments.
Dwg.1/6

L43 ANSWER 60 OF 82 MEDLINE on STN DUPLICATE 18
ACCESSION NUMBER: 1998384449 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9716714
TITLE: Indicators and optical configuration for simultaneous high-resolution recording of membrane potential and intracellular calcium using **laser** scanning **microscopy**.
AUTHOR: Bullen A; Saggau P
CORPORATE SOURCE: Division of Neuroscience, Baylor College of Medicine, One Baylor Plaza, Houston, TX-77030, USA.
CONTRACT NUMBER: NS33147 (NINDS)
SOURCE: Pflugers Archiv : European journal of physiology, (1998 Oct) 436 (5) 788-96.
Journal code: 0154720. ISSN: 0031-6768.
PUB. COUNTRY: GERMANY: Germany, Federal Republic of
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English

FILE SEGMENT: Priority Journals
ENTRY MONTH: 199905
ENTRY DATE: Entered STN: 19990607
Last Updated on STN: 19990607
Entered Medline: 19990526

AB The instrumental design and experimental conditions for high-speed, simultaneous optical recording of membrane potential and intracellular Ca2+ with subcellular resolution are presented. This method employs an extended version of a high-speed, random-access, **laser**-scanning fluorescence **microscope** designed to record fast physiological signals from small neuronal structures with high spatiotemporal resolution (Bullen, Patel, Saggau, Biophys J 73:477-491, 1997). With this instrument, imaging and optical recording functions are conducted separately allowing frame rates up to 3 kHz. Individual scanning points are selected interactively from a reference image collected with differential interference contrast (DIC) optics. At each recording site, fluorescence from two indicators is measured simultaneously by independent photodetectors. To optimize signal strength, spectral separation and the achievable signal-to-noise ratio, several combinations of voltage-sensitive dye, Ca2+ indicator and optical elements (dichroic mirrors, **filters**, etc.) were considered. The best results were achieved from the combination of the intracellular voltage-sensitive dye Di-2-ANEPEQ and the Ca2+ indicator Calcium Green-1. These indicators have overlapping absorption spectra allowing simultaneous excitation with a single laser line (488 nm). Spectral **separation** of the **fluorescence** from these two indicators was accomplished using a secondary dichroic mirror (DCLP580) and emission **filters** (535/45 and OG590). Representative records obtained with this instrument and this combination of indicators demonstrate the feasibility of simultaneous high fidelity measurements of membrane potential and intracellular Ca2+ from the same point at high spatial (2 micrometer) and temporal (<ms) resolution without requiring signal averaging.

L43 ANSWER 61 OF 82 MEDLINE on STN DUPLICATE 19
ACCESSION NUMBER: 1998143694 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9473644
TITLE: Two-**laser** dual-immunofluorescence confocal **laser** scanning **microscopy** using Cy2- and Cy5-conjugated secondary antibodies: unequivocal detection of co-localization of neuronal markers.
AUTHOR: Wouterlood F G; Van Denderen J C; Blijleven N; Van Minnen J; Hartig W
CORPORATE SOURCE: Department of Anatomy, Graduate School of Neurosciences, Free University, Amsterdam, The Netherlands..
fg.wouterlood.anat@med.vu.nl
SOURCE: Brain research. Brain research protocols, (1998 Jan) 2 (2) 149-59.
Journal code: 9716650. ISSN: 1385-299X.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199804
ENTRY DATE: Entered STN: 19980416
Last Updated on STN: 19980416
Entered Medline: 19980403

AB The ability of the confocal **laser** scanning **microscope** (CLSM) to visualize in one focal plane the fluorescence associated with multiple markers renders this instrument extremely valuable for the study

of co-localization of various markers in the somata and cellular processes of neurons. In the present protocol we deal with the question whether or not co-localization exists in neurons of two different neuronal markers. The conventionally used method towards answering this type of question is double-immunofluorescence microscopy. Fundamental to this approach, independent from whether the preparations are observed in a normal fluorescence microscope or in a CLSM, is that each of the applied fluorescent labels should not chemically interact with the other label or inadvertently be visible through the illumination/**filter** setup designed for the other fluorophore. In the field of double-label CLSM, three types of approach are distinguished: the single-laser, two-color approach, the two-laser, two-color approach, and the time-resolved approach (Brismar and Ulfhake, 1997). Each type of approach has its own advantages and disadvantages. In the instrument in our institute (a Zeiss LSM 410), combinations of fluorophores like fluorescein isothiocyanate (FITC) and tetramethyl rhodamine isothiocyanate (TRITC) are less useful, since TRITC produces a detectable signal in the FITC illumination/ **filter** setup. Instead of experimenting with **filter** sets we have chosen to take two measures to eliminate this problem. Our first measure is to use fluorophores whose absorption/emission spectra overlap as little as possible. We have selected among the recently developed carbocyanine fluorophores one fluorescing in the visible range (Cy2) (green, in the same range as FITC and with much better resistance to fading than FITC; cf. Hartig et al., 1996), and another fluorescing in the near infrared range (Cy5, infrared; cf. Mesce et al., 1993). Our second measure to ensure excellent signal separation is the adoption of a two-laser, two-color approach. Co-localization of the calcium binding protein, calretinin, and a neurotransmitter, gamma-aminobutyric acid (GABA), in interneurons in the entorhinal cortex and the hippocampus of the rat was used as the principal test model. We compare the above two-laser, two-color approach with a single-laser, two-color CLSM approach using as markers Cy2 and the red fluorophore, Texas Red (physical characteristics resembling TRITC). In this paper considerable attention is paid to control experiments to verify the reliability of the staining procedure. The results show that our two-laser, two-color CLSM approach produces a complete and unambiguous **separation** of the **fluorescent** labels, Cy2 and Cy5. We are currently using this method to determine the degree of co-localization of neurochemical substances in CNS neurons.

L43 ANSWER 62 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1998:370898 HCAPLUS
DOCUMENT NUMBER: 129:133194
TITLE: Fluorescence recovery after photobleaching measured by confocal microscopy as a tool for the analysis of vesicular lipid transport and plasma membrane mobility
AUTHOR(S): Schmitz, Gerd; Gotz, Alexandra; Orso, Evelyn; Rothe, Gregor
CORPORATE SOURCE: Institute for Clinical Chemistry and Laboratory Medicine, University of Regensburg, Regensburg, D-93042, Germany
SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (1998), 3260(Optical Investigations of Cells in Vitro and in Vivo), 127-135
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The vesicular transport of lipids from the endoplasmic reticulum via the

Golgi apparatus affects the composition of the plasma membrane. The purpose of our study was to develop an in vitro test system for characterization of vesicular lipid transport kinetics by using confocal microscopy and fluorescence recovery after photobleaching (FRAP). Fibroblasts from two patients homozygous for the hypercatabolic HDL deficiency syndrome Tangier and 4 control subjects were pulsed with the C6-NBD-ceramide for 30 min. Chase incubation at room temperature resulted in the metabolic accumulation of fluorescent C6-NBD-sphingomyelin and C6-NBD-glycosylceramides in the medial- and trans-Golgi region. Cells were analyzed with an inverted Leica TCS microscope. Calibration was performed through the anal. of diffusion of 50 nm microparticles embedded in media of different viscosity. An **acousto-optic** tunable **filter** (AOTF) was used for the selective bleaching of the medial- and trans-Golgi region followed by anal. of the fluorescence recovery for 4 min. Post-bleach fluorescence recovery through the trans-Golgi-oriented transport of NBD-sphingomyelin was calculated from 2-dimensional scans. Tangier fibroblasts displayed a retarded recovery of fluorescence in the trans-Golgi region. This suggests that the vesicular transport of sphingomyelin and cholesterol is disturbed in Tangier disease confirming data from our laboratory generated with radio metabolites on whole cells. Our data suggest that FRAP anal. allows a sensitive kinetic and spatially resolved anal. of disturbances of vesicular lipid transport.

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 63 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 1998-090879 [09] WPIDS
DOC. NO. NON-CPI: N1998-072118
DOC. NO. CPI: C1998-030729
TITLE: Fluorescence measurement method for specimens such as biological **samples** - involves measuring **concentration/variety** of **fluorescent** material based on light emitted by **sphere** body which comprises fluorescent material.
DERWENT CLASS: J04 S03
PATENT ASSIGNEE(S): (SEIT-N) SEITAIKO JOHO KENKYUSHO KK
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
JP 09318536	A	19971212	(199809)*		5

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
JP 09318536	A	JP 1996-196441	19960725

PRIORITY APPLN. INFO: JP 1996-68632 19960325
AN 1998-090879 [09] WPIDS
AB JP 09318536 A UPAB: 19980302
The method involves adding scattering material to specimen comprising fluorescent material to form a **sphere** body. Then, the excitation light is irradiated onto the **sphere** body.

The light emitted by **sphere** body is measured based on which variety/concentration of the fluorescent material is identified.

ADVANTAGE - Variety/concentration of fluorescent material can be identified reliably. Reduced amount of specimen is used. Dwg.1/4

L43 ANSWER 64 OF 82 MEDLINE on STN DUPLICATE 20
ACCESSION NUMBER: 1998030620 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9361015
TITLE: Cell-type and tissue-specific expression of caveolin-2. Caveolins 1 and 2 co-localize and form a stable hetero-oligomeric complex in vivo.
AUTHOR: Scherer P E; Lewis R Y; Volonte D; Engelman J A; Galbiati F; Couet J; Kohtz D S; van Donselaar E; Peters P; Lisanti M P
CORPORATE SOURCE: Department of Cell Biology, Albert Einstein College of Medicine, Bronx, New York 10461, USA.
SOURCE: Journal of biological chemistry, (1997 Nov 14) 272 (46) 29337-46.
Journal code: 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-AF035752
ENTRY MONTH: 199712
ENTRY DATE: Entered STN: 19980109
Last Updated on STN: 20000907
Entered Medline: 19971211

AB Caveolae are microdomains of the plasma membrane that have been implicated in organizing and compartmentalizing signal transducing molecules. Caveolin, a 21-24-kDa integral membrane protein, is a **principal** structural **component** of caveolae membrane in vivo. Recently, we and other laboratories have identified a family of caveolin-related proteins; caveolin has been re-termed caveolin-1. Here, we examine the cell-type and tissue-specific expression of caveolin-2. For this purpose, we generated a novel mono-specific monoclonal antibody probe that recognizes only caveolin-2, but not caveolins-1 and -3. A survey of cell and tissue types demonstrates that the caveolin-2 protein is most abundantly expressed in endothelial cells, smooth muscle cells, skeletal myoblasts (L6, BC3H1, C2C12), fibroblasts, and 3T3-L1 cells differentiated to adipocytes. This pattern of caveolin-2 protein expression most closely resembles the cellular distribution of caveolin-1. In line with these observations, co-immunoprecipitation experiments with mono-specific antibodies directed against either caveolin-1 or caveolin-2 directly show that these molecules form a stable hetero-oligomeric complex. The in vivo relevance of this complex was further revealed by dual-labeling studies employing confocal **laser** scanning **fluorescence microscopy**. Our results indicate that caveolins 1 and 2 are strictly co-localized within the plasma membrane and other internal cellular membranes. Ultrastructurally, this pattern of caveolin-2 localization corresponds to caveolae membranes as seen by immunoelectron microscopy. Despite this strict co-localization, it appears that regulation of caveolin-2 expression occurs independently of the expression of either caveolin-1 or caveolin-3 as observed using two different model cell systems. Although caveolin-1 expression is down-regulated in response to oncogenic transformation of NIH 3T3 cells, caveolin-2 protein levels remain unchanged. Also, caveolin-2 protein levels remain unchanged during the differentiation of C2C12 cells from myoblasts to myotubes, while caveolin-3 levels are dramatically induced by this process. These results suggest that expression levels of caveolins 1, 2, and 3 can be

independently up-regulated or down-regulated in response to a variety of distinct cellular cues.

L43 ANSWER 65 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:347417 HCAPLUS
DOCUMENT NUMBER: 127:78066
TITLE: **Multiphoton** excitation fluorescence **microscopy** and spectroscopy of in vivo human skin
AUTHOR(S): Masters, Barry R.; So, Peter T. C.; Gratton, Enrico
CORPORATE SOURCE: Dep. Anatomy and Cell Biology, Uniformed Services Univ. Health Sci., Bethesda, MD, 20814, USA
SOURCE: Biophysical Journal (1997), 72(6), 2405-2412
CODEN: BIOJAU; ISSN: 0006-3495
PUBLISHER: Biophysical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB **Multiphoton** excitation **microscopy** at 730 nm and 960 nm was used to image in vivo human skin autofluorescence from the surface to a depth of .apprx.200 μm. The emission spectra and fluorescence lifetime images were obtained at selected locations near the surface (0-50 μm) and at deeper depths (100-150 μm) for both excitation wavelengths. **Cell** borders and **cell** nuclei were the prominent structures observed The spectroscopic data suggest that reduced pyridine nucleotides, NAD(P)H, are the primary source of the skin autofluorescence at 730 nm excitation. With 960 nm excitation, a two-photon fluorescence emission at 520 nm indicates the presence of a variable, position-dependent intensity component of flavoprotein. A second fluorescence emission component, which starts at 425 nm, is observed with 960-nm excitation. Such fluorescence emission at wavelengths less than half the excitation wavelength suggests an excitation process involving three or more photons. This conjecture is further confirmed by the observation of the super-quadratic dependence of the fluorescence intensity on the excitation power. Further work is required to spectroscopically identify these emitting species. This study demonstrates the use of **multiphoton** excitation **microscopy** for functional imaging of the metabolic states of in vivo human skin **cells**.
REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 66 OF 82 MEDLINE on STN DUPLICATE 21
ACCESSION NUMBER: 97201652 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9049152
TITLE: A modified confocal **laser** scanning **microscope** allows fast ultraviolet ratio imaging of intracellular Ca2+ activity using Fura-2.
AUTHOR: Nitschke R; Wilhelm S; Borlinghaus R; Leipziger J; Bindels R; Greger R
CORPORATE SOURCE: Physiologisches Institut der Albert-Ludwigs-Universitat Freiburg, Hermann-Herder-Strasse 7, D-79104 Freiburg, Germany.
SOURCE: Pflugers Archiv : European journal of physiology, (1997 Mar) 433 (5) 653-63.
Journal code: 0154720. ISSN: 0031-6768.
PUB. COUNTRY: GERMANY: Germany, Federal Republic of
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals

ENTRY MONTH: 199706
ENTRY DATE: Entered STN: 19970612
Last Updated on STN: 19970612
Entered Medline: 19970603

AB A confocal, ultraviolet **laser** scanning **microscope** (LSM) for reliable ratio measurements of localized intracellular Ca2+ gradients using the Ca2+-sensitive dye Fura-2 was developed. In a commercial LSM, the filter wheels for the excitation band-pass filters and the grey **filters** were replaced by **acousto-optic** tunable **filters** (AOTF) for rapid switching (</=1.5 micros) of the ultraviolet (351 and 364 nm) and the visible (457, 476, 488, 514 nm) excitation light. This enabled dual wavelength excitation of Fura-2, or 2'7'-biscarboxyethyl-5(6)-carboxyfluorescein (BCECF) for pH measurements. Changing to a transmitted-light detector of high sensitivity allowed for simultaneous recording of differential interference contrast images of the preparation with the excitation light. The AOTF fine control of the intensity of the excitation light and improvements in the emission detector sensitivity enabled the acquisition of up to 120 ratio pairs of high-quality images from a single cell. The optical capabilities and limitations of the instrument were evaluated with fluorescent beads and dye-loaded cultured cells. Agonist-induced intracellular Ca2+ transients in HT29 cells were recorded to test for the instrument's ability to measure changes in [Ca2+]i. Ratio z-sections from Fura-2-loaded cells showed an inhomogeneity of the Fura-2 loading with an accumulation of the dye mostly in the mitochondria. We show, as an example of the microscope's achievable resolution, the spatial and temporal heterogeneity of [Ca2+]i signals in mitochondria and the cytosol in response to agonist-evoked stimulation of HT29 cells. In addition, we show that the lipophilic, membrane-bound Fura-2 derivative Fura-C18, for measurements of near-membrane Ca2+ changes, can be used with this confocal microscope. This new LSM is expected to deepen our understanding of localized [Ca2+]i signals; for example, the nuclear Ca2+ signalling or the [Ca2+]i changes that occur during stimulation of ion secretion in polarized epithelial cells.

L43 ANSWER 67 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1998:113757 HCAPLUS
DOCUMENT NUMBER: 128:215968
TITLE: The intracellular distribution patterns of myosin and actin are different among human neutrophils and monocytes during locomotion
AUTHOR(S): Takubo, Takayuki; Tatsumi, Noriyuki
CORPORATE SOURCE: Dep. Clinical Lab. Med., Osaka City Univ. Med. Sch., Asahimachi, Abeno-ku, Osaka, 545, Japan
SOURCE: Haematologica (1997), 82(6), 643-647
CODEN: HAEMAX; ISSN: 0390-6078
PUBLISHER: Il Pensiero Scientifico Editore
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Neutrophils and monocytes initiate their characteristic ameboid movement by using mechanochem. systems of contractile proteins. It is known that neutrophils and monocytes exhibit differing patterns of motility. We set out to determine whether these differences may be associated with the intracellular distribution of myosin and actin, and **principal components** of the cellular apparatus involved in motility. Myosin and F-actin in human neutrophils and monocytes were observed at resting and motile stages by using a double-**fluorescence** staining procedure and a confocal **laser** scanning **microscope**. In motile neutrophils, myosin was distributed in the lamellipodia and the cytoplasm,

observed as a speckled pattern, whereas F-actin was concentrated in the front of the lamellipodia and in the perinuclear area. In the motile monocytes, myosin was found in the wide lamellipodia and was seen to radiate from the cytoplasm towards the edges of the cell in a punctate pattern. F-actin was densely distributed along the leading edge of the wide lamellipodia as well as in the perinuclear region. No differences were apparent in the intracellular distribution of myosin and F-actin between the resting neutrophils and monocytes. Findings indicate that differing patterns of arrangement of myosin and actin in the lamellipodia and cytoplasm of neutrophils and monocytes may contribute to their movement, in vitro.

REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 68 OF 82 MEDLINE on STN
ACCESSION NUMBER: 97187446 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9034899
TITLE: Light and dark cells of rat vallate taste buds are morphologically distinct cell types.
AUTHOR: Pumplin D W; Yu C; Smith D V
CORPORATE SOURCE: Department of Anatomy and Neurobiology, University of Maryland School of Medicine, Baltimore 21201-1509, USA.. dpumplin@umabnet.ab.umd.edu
CONTRACT NUMBER: P01 DC00347 (NIDCD)
SOURCE: Journal of comparative neurology, (1997 Feb 17) 378 (3) 389-410.
Journal code: 0406041. ISSN: 0021-9967.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199704
ENTRY DATE: Entered STN: 19970507
Last Updated on STN: 19970507
Entered Medline: 19970429

AB Cells of mammalian taste buds have been classified into morphological types based on ultrastructural criteria, but investigators have disagreed as to whether these are distinct cell types or the extremes of a continuum. To address this issue, we examined taste buds from rat vallate papillae that had been sectioned transversely, rather than longitudinally, to their longest axis. In these transverse sections, dark (Type I) and light (Type II) cells were easily distinguished by their relative electron density, shape and topological relationships. Cells with electron-lucent cytoplasm (light cells) were circular or oval in outline, while those with electron-dense cytoplasm (dark cells) had an irregular outline with sheetlike cytoplasmic projections that separated adjacent light cells. A hierarchical cluster analysis of 314 cells across five morphological parameters (cell shape and area, and nuclear ellipticity, electron density and invagination) revealed two distinct groups of cells, which largely corresponded to the dark and light cells identified visually. These cells were not continuously distributed within a **principal components** factor solution. Differences in the means for dark and light cells were highly significant for each morphological parameter, but within either cell type, changes in one parameter correlated little with changes in any other. These analyses all failed to reveal cells with a consistent set of intermediate characteristics, suggesting that dark and light cells of rat vallate taste buds are distinct cell types rather than extremes of a continuum. Sections of taste buds were stained with antibodies to several carbohydrates, then observed by indirect

immunofluorescence. Optical sections taken with a confocal **laser** -scanning **microscope** showed that the Lewis antigen was present only on spindle-shaped cells with circular or oval outlines and lacking transverse projections; these characteristic shapes matched those of light cells seen by electron microscopy. The H blood group antigen and the 2B8 epitope appeared at most cell-cell interfaces in the bud and are present on dark cells and possibly on some light cells. These findings relate molecular markers to morphological phenotypes and should facilitate future studies of taste cell turnover, development and regeneration.

L43 ANSWER 69 OF 82 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 1998032153 EMBASE
TITLE: [Confocal-slit-scanning microscopy as applied to the in-vivo examination of the corneal microstructure related to contact lens wearing].
DIE ANWENDUNG DER KONFOKALEN SPALT-SCANNING-MIKROSKOPIE AUF DIE IN VIVO- UNTERSUCHUNG DER KORNEA-MIKROSTRUKTUR IM ZUSAMMENHANG MIT DEM TRAGEN VON KONTAKTLINSEN.
AUTHOR: Thaer A.; Geyer O.-C.
CORPORATE SOURCE: A. Thaer, Elchstr. 35, D-26603 Aurich, Germany
SOURCE: Contactologia, (1997) Vol. 19, No. 4, pp. 158-177.
Refs: 116
ISSN: 0171-9599 CODEN: CNTCDF
COUNTRY: Germany
DOCUMENT TYPE: Journal; General Review
FILE SEGMENT: 012 Ophthalmology
027 Biophysics, Bioengineering and Medical Instrumentation
LANGUAGE: German
SUMMARY LANGUAGE: German; English
ENTRY DATE: Entered STN: 19980212
Last Updated on STN: 19980212

AB Wearing of contact lenses causes direct changes of the physiological conditions at the interface tearfilm/corneal surface. Various c.l.-parameters like the chemical/physical composition porosity, water uptake, mechanical, physical and chemical surface properties and fitting parameters are involved. As consequence, the micro-environment of the corneal tissue is changed. Whereas reaction of the corneal macrostructure is examined by use of the slit lamp, information on changes of the microstructure of the cornea requires lightmicroscopical resolution and magnification. The confocal scanning microscopy developed during the last 25 years has established the instrumental and methodical basis for the microscopical examination of the micro-anatomy of the individual corneal layers separated from each other as discrete optical sections. By adaptation of this microscopical principle to important applicational requirements - for instance by synchronizing the scanning process with the video image cycle for avoiding image blurring by eye motions - imaging and image documentation of each individual spatially coherent optical section can be carried out unaffected by unvoluntary eye motions up to very high light-microscopical resolution. Because of the very low refractive index differences between the corneal microstructures and their immediate structureless environment, imaging of corneal microstructures by use of incident light microscopy based on reflection, refraction and re-scattering is greatly improved by use of the confocal scanning mode. In case of fluorescence microscopy the image contrast is independent of these refractive index differences, however, the image sectioning capability profits by the confocal scanning mode, too. Preliminary experiences gained from the application of this instrumentation and methodology to

short-, medium and long-term reactions of the cornea at the cell-resp. microstructure level caused by contact lens wearing are described. Examples are a.o. the accumulation of desquamated superficial cells below soft contact lenses, the initial deposition of organic substances onto the inner and outer surfaces of the contact lens preferably at its surface imperfections and the development of edema in the epithelium and stroma as well. As short- to medium term reactions for instance as consequence of hypoxic conditions in the tearfilm, reduced proliferation **activity** of the basal **cell** layer (and increased proliferation **activity** following removal of contact lens) and the activation of keratocytes can be observed. Polymegatism of the endothelial cell monolayer as an extreme example for long-term reactions is often observed as consequence of contact lens wearing through many years. Short- and short-to medium term changes of the corneal micro-anatomy may become important criteria also for testing purposes. The special role of recording microphotometry for measuring re-scattered and reflected light or fluorescence intensity during fast continuous displacement of the focusing plane through the cornea perpendicular to its layered structure is discussed. Using this technique important information is obtained on the microstructural organization of the cornea between tear film and endothelium and on the dynamics of permeation of **fluorescein** and its derivatives **separately** for the corneal segments.

L43 ANSWER 70 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 1996-163553 [17] WPIDS
DOC. NO. NON-CPI: N1996-137096
TITLE: Scanning type optical microscope with **fluorescent** detection and observation optical system - has multiple photo detectors to detect light passing through multiple slits each of different width.
DERWENT CLASS: P81 S02 S03
PATENT ASSIGNEE(S): (OLYU) OLYMPUS OPTICAL CO LTD
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
JP 08043739	A	19960216	(199617)*		10
JP 3568626	B2	20040922	(200462)		12

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
JP 08043739	A	JP 1995-125150	19950524
JP 3568626	B2	JP 1995-125150	19950524

FILING DETAILS:

PATENT NO	KIND	PATENT NO
JP 3568626	B2 Previous Publ.	JP 08043739

PRIORITY APPLN. INFO: JP 1994-109678 19940524
AN 1996-163553 [17] WPIDS
AB JP 08043739 A UPAB: 19960428
The scanning type optical **microscope** consists of a **laser** light source (1) to emit the monochromatic laser light. A specimen (19) is irradiated with emitted laser light after making it to pass through a beam

expander (2), a dichroic mirror (4), a XY scanning optical system (5), a pupil projection lens (6), and a microscope (7). An optical detection unit detects the laser light passing through the specimen.

An image forming optical system forms the image of the detected laser light. A co-focal point diaphragm (8) which is arranged on the focal point, receives the **fluorescence** obtained by the image formation system. A **grating** is used to get the spectral lines of the fluorecence. Multiple slits (10-12) of different width is provided through which the light from the **grating** is transmitted. Multiple photodetectors (13-15) are employed corresponding to the slits to detect the light coming from the slits.

ADVANTAGE - Reduces mfg cost. Avoids use of **filters**. Detects noise ratio.

Dwg.1/12

L43 ANSWER 71 OF 82 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN DUPLICATE 22

ACCESSION NUMBER: 1997:74579 BIOSIS
DOCUMENT NUMBER: PREV199799381282
TITLE: The applicability of hematoxylin-eosin staining plus fluorescence or confocal **laser** scanning **microscopy** to the study of elastic fibers in cartilages.
AUTHOR(S): De Carvalho, Hernandes Faustino [Reprint author]; Taboga, Sebastiao Roberto
CORPORATE SOURCE: Dep. Cell Biol., UNICAMP, CP 6109, 13083-970 Campinas, Brazil
SOURCE: Comptes Rendus de l'Academie des Sciences Serie III Sciences de la Vie, (1996) Vol. 319, No. 11, pp. 991-991. CODEN: CRASEV. ISSN: 0764-4469.
DOCUMENT TYPE: Article
LANGUAGE: French
ENTRY DATE: Entered STN: 26 Feb 1997
Last Updated on STN: 26 Feb 1997

AB This study focuses on the use of hematoxylin-eosin staining plus fluorescence microscopy for the investigation of elastic fibers in some elastic cartilages. We have observed that elastic fibers are consistently imaged by the proposed procedure and the resolution attained is similar to that obtained with the classical Weigert's fuchsin-resorcin. The results also demonstrate that elastin autofluorescence gives little or no **contribution** to the final **fluorescence** and that the use of the confocal **laser** scanning **microscope** adds to the resolution, permits the use of thicker sections and reveals of minute structural features. We conclude that this is a relevant tool in elastin research.

L43 ANSWER 72 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1995:697959 HCAPLUS
DOCUMENT NUMBER: 123:102664
TITLE: Increased perinuclear Ca2+ activity evoked by metabotropic glutamate receptor activation in rat hippocampal neurons
AUTHOR(S): Phenna, S.; Jane, S. D.; Chad, J. E.
CORPORATE SOURCE: Department of Physiology and Pharmacology, University of Southampton, Southampton, SO16 7PX, UK
SOURCE: Journal of Physiology (Cambridge, United Kingdom) (1995), 486(1), 149-61
CODEN: JPHYA7; ISSN: 0022-3751
PUBLISHER: Cambridge University Press

DOCUMENT TYPE: Journal
LANGUAGE: English

AB The effect of metabotropic glutamate receptor activation on intracellular Ca2+ activity (αCai) of rat hippocampal pyramidal neurons in vitro was examined using ratiometric confocal **laser** scanning **microscopy** with the Ca2+-sensitive fluorescent probe indo-1 AM. Metabotropic receptors were selectively activated with 1S,3R-1-aminocyclopentane-1,3-dicarboxylic acid (1S,3R-ACPD; 100 μM) in the presence of D-2-amino-5-phosphonovaleric acid (D-APV), 6-cyano-7-nitroquinoxaline-2,3-dione (CNQX) and CdCl2. Most pyramidal neurons (77/84) responded with an elevation in Ca2+ activity, maximal after 3-5 min. **Fluorescence ratio** responses were concentration dependent (EC50 ≈ 10 μM) and were blocked by prior application of the antagonist (RS)-4-carboxy-3-hydroxyphenylglycine (RS-CHPG, 300 μM). Responses to 1S,3R-ACPD (100 μM) also caused acidification of the neurons, from estimated control pH 7.2 to pH 6.6 (measured with the pH-sensitive dye SNAFL-calcein). The correction factor for indo-1 determination of Ca2+ was estimated to be +1.4. Elevations in αCa1 were greater within the perinuclear region (>1000 nM), than in the cytoplasm (.apprx.200 nM). This region was devoid of staining by the endoplasmic reticulum staining dye 3,3'-dihexyloxacarbocyanine iodide (DiOC6(3)). It is concluded that activation of metabotropic receptors in immature rat hippocampal pyramidal neurons leads to a large increase in perinuclear Ca2+ which would be well positioned to interact with the genome.

L43 ANSWER 73 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1995:844347 HCAPLUS
DOCUMENT NUMBER: 123:250333
TITLE: Confocal **fluorescence ratio** imaging of ion **activities** in plant **cells**
AUTHOR(S): Fricker, M. D.; Tlalka, M.; Ermantraut, J.; Obermeyer, G.; Dewey, M.; Gurr, S.; Patrick, J.; White, N. S.
CORPORATE SOURCE: Department Plant Sciences, University Oxford, Oxford, OX1 3RB, UK
SOURCE: Scanning Microscopy, Supplement (1994), 8(Science of Biological Microanalysis), 391-405
CODEN: SMSUEU; ISSN: 0892-953X
PUBLISHER: Scanning Microscopy International
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Fluorescent probes allow measurement of dynamic changes of calcium and pH in living cells. Imaging using confocal scanning **laser** **microscopy** provides a route to spatially map these dynamics over time in single optical sections or in 3-D images. We have developed a dual-- excitation confocal system to allow ratio measurements of pH and calcium, that compensate for changes in dye distribution, leakage and photobleaching. Application of these techniques to plant tissues is complicated by the difficulty in loading the tissues with dye. We describe a new technique to assist dye loading in intact leaves of Lemna using a pre-treatment with cutinase. Once within plant tissues, many dyes compartmentalize into the vacuole. We report the use of chloromethylfluorescein diacetate as an alternative to BCECF [2',7'-bis-(2-carboxyethyl)-5-(and 6)carboxyfluorescein] as a pH probe with greater cytoplasmic retention times. In addition, the confocal system allowed discrimination of signals from different compartments and permitted simultaneous measurement of vacuolar and cytoplasmic pH ratios in epidermal strips from Hordeum. We have developed a series of software

tools to extract quant. data from multi-dimensional images and illustrate these approaches with reference to pollen tube growth in Lilium and peptide-evoked changes in pH and calcium in stomatal guard cells from Commelina and Vicia.

L43 ANSWER 74 OF 82 MEDLINE on STN DUPLICATE 23
ACCESSION NUMBER: 95097378 MEDLINE
DOCUMENT NUMBER: PubMed ID: 7799426
TITLE: Scanning microphotolysis: a new photobleaching technique based on fast intensity modulation of a scanned laser beam and confocal imaging.
AUTHOR: Wedekind P; Kubitscheck U; Peters R
CORPORATE SOURCE: Institut fur Medizinische Physik und Biophysik, Westfalische Wilhelms-Universitat, Munster, Germany.
SOURCE: Journal of microscopy, (1994 Oct) 176 (Pt 1) 23-33. Journal code: 0204522. ISSN: 0022-2720.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199501
ENTRY DATE: Entered STN: 19950215
Last Updated on STN: 19950215
Entered Medline: 19950126

AB The fluorescence photobleaching method has been widely used to study molecular transport in single living cells and other microsystems while confocal microscopy has opened new avenues to high-resolution, three-dimensional imaging. A new technique, scanning microphotolysis (Scamp), combines the potential of photobleaching, beam scanning and confocal imaging. A confocal scanning **laser microscope** was equipped with a sufficiently powerful laser and a novel device, the 'Scamper'. This consisted essentially of a **filter** changer, an **acousto-optical** modulator (AOM) and a computer. The computer was programmed to activate the AOM during scanning according to a freely defined image mask. As a result, almost any desired pattern could be bleached ('written') into fluorescent samples at high definition and then imaged ('read') at non-bleaching conditions, employing full confocal resolution. Furthermore, molecular transport could be followed by imaging the dissipation of bleach patterns. Experiments with living cells concerning dynamic processes in cytoskeletal filaments and the lateral mobility of membrane lipids suggest a wide range of potential biological applications. Thus, Scamp offers new possibilities for the optical manipulation and analysis of both technical and biological microsystems.

L43 ANSWER 75 OF 82 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1992:139616 HCAPLUS
DOCUMENT NUMBER: 116:139616
TITLE: A new spectrally resolved confocal scanning **laser microscope**
AUTHOR(S): Bowron, J. W.; Damaskinos, S.; Dixon, A. E.
CORPORATE SOURCE: Guelph-Waterloo Program Grad. Work Phys., Univ. Waterloo, Waterloo, ON, N2L 3G1, Can.
SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (1992), 1556(Scanning Microsc. Instrum.), 124-35
CODEN: PSISDG; ISSN: 0277-786X
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A spectrally resolved confocal microscope was developed with high photon

efficiency for photoluminescence and **fluorescence** measurements. A scanning **grating** is placed inside the detection arm of the microscope so that the diffraction-limited spot on the sample acts like the entrance slit, and the detector pinhole acts like the exit slit of a standard monochromator. The pinhole also performs the same function as the detector pinhole in a standard confocal microscope. This arrangement has better photon efficiency than focusing the light from the detector pinhole of a standard confocal scanning **laser microscope** onto the entrance slit of a **grating** monochromator. This configuration also produces higher spectral resolution and is more flexible than one in which bandpass **filters** are placed in the detection arm. The microscope is described and measurements of the spectral and axial resolns. are presented. Axial resolution measurements were made using a planar sample that is both reflecting and photoluminescent. Spectrally-resolved photoluminescence and **fluorescence** images are presented.

L43 ANSWER 76 OF 82 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation on STN

ACCESSION NUMBER: 91:291341 SCISEARCH
THE GENUINE ARTICLE: FL887
TITLE: HIGH-SENSITIVITY DNA DETECTION WITH A LASER-EXCITED CONFOCAL FLUORESCENCE GEL SCANNER
AUTHOR: QUESADA M A; RYE H S; GINGRICH J C; GLAZER A N; MATHIES R A (Reprint)
CORPORATE SOURCE: UNIV CALIF BERKELEY, DEPT CHEM, BERKELEY, CA, 94720; UNIV CALIF BERKELEY LAWRENCE BERKELEY LAB, CTR HUMAN GENOME, BERKELEY, CA, 94720
COUNTRY OF AUTHOR: USA
SOURCE: BIOTECHNIQUES, (1991) Vol. 10, No. 5, pp. 616.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 30

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB A high-sensitivity, laser-excited confocal fluorescence gel scanner has been developed and applied to the detection of fluorescently labeled DNA. An argon ion laser (1-10 mW at 488 nm) is focused in the gel with a high-numerical aperture **microscope** objective. The **laser** -excited fluorescence is gathered by the objective and focused on a confocal spatial **filter**, followed by a spectral **filter** and photo-detector. The gel is placed on a computer-controlled scan stage, and the scanned image of the gel fluorescence is stored and analyzed in a computer. This scanner has been used to detect DNA separated on sequencing gels, agarose mapping gels and pulsed field gels. Sanger sequencing gels were run on M13mp18 DNA using a fluoresceinated primer. The 400-mu-m-thick gels, loaded with 30 fmol of DNA fragments in 3-mm lanes, were scanned at 78-mu-m resolution. The high resolution of our scanner coupled with image processing allows us to read up to approximately 300 bases in four adjacent sequencing lanes. The minimum band size that could be detected and read was approximately 200 mu-m. This instrument has a limiting detection sensitivity of approximately 10 amol of fluorescein-labeled DNA in a 1 x 3-mm band. In applications to agarose mapping gels, we have exploited the fact that DNA can be prestained with ethidium homodimer, followed by electrophoresis and fluorescence detection to achieve picogram sensitivity (8). We have also developed methods using both ethidium homodimer and thiazole orange staining which permit two-color detection of DNA in one lane. Finally, these methods have been used to perform high-sensitivity detection of DNA

separated on pulsed field gels. This **fluorescence** gel scanner is advantageous because it has high detection sensitivity, the off-line detection apparatus is not tied to the electrophoresis system, and it immediately provides a quantitative image for data analysis and display.

L43 ANSWER 77 OF 82 MEDLINE on STN DUPLICATE 24
ACCESSION NUMBER: 90342833 MEDLINE
DOCUMENT NUMBER: PubMed ID: 2382707
TITLE: H+/base transport in principal **cells** characterized by confocal fluorescence imaging.
AUTHOR: Wang X; Kurtz I
CORPORATE SOURCE: Department of Medicine, University of California, School of Medicine, Los Angeles 90024.
CONTRACT NUMBER: DK-39212 (NIDDK)
SOURCE: American journal of physiology, (1990 Aug) 259 (2 Pt 1) C365-73.
Journal code: 0370511. ISSN: 0002-9513.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199009
ENTRY DATE: Entered STN: 19901012
Last Updated on STN: 19970203
Entered Medline: 19900911

AB A dual-excitation inverted confocal **laser**-scanning **microscope** has been developed for measuring intracellular pH (pHi) using 2',7'-bis(2-carboxyethyl)-5,6-carboxyfluorescein (BCECF) in individual **cells** in the isolated perfused cortical collecting tubule (CCT). This new microscope has superior depth discrimination, which eliminates the **contribution** of **fluorescence** information from **cells** outside the plane of focus. pHi was monitored in real time from a spot 0.55 microns in diameter within a single **cell**. Experiments were performed to examine the apical and basolateral membrane H+/base transport properties of single principal **cells**. The results indicate that principal **cells** possess a basolateral membrane Na(+)-independent Cl-/base exchanger, a Na(+)-H+ antiporter, and a Na+/base cotransporter. No evidence was found for an apical membrane Na(+)-independent Cl-/base exchanger. The data provide evidence for base efflux pathways in the principal **cell** and are compatible with the hypothesis that principal **cells** contribute importantly to H+/base transport in the CCT. The new methodology described in this report can be applied to other epithelia that are optically heterogeneous in the depth dimension.

L43 ANSWER 78 OF 82 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN
ACCESSION NUMBER: 90260348 EMBASE
DOCUMENT NUMBER: 1990260348
TITLE: H+/base transport in principle **cells** characterized by confocal fluorescence imaging.
AUTHOR: Wang X.; Kurtz I.
CORPORATE SOURCE: UCLA, Division of Nephrology, Factor Building, 10833 Le Conte Boulevard,Los Angeles, CA 90024, United States
SOURCE: American Journal of Physiology - Cell Physiology, (1990) Vol. 259, No. 2 28-3, pp. C365-C373.
ISSN: 0002-9513 CODEN: AJPCDD
COUNTRY: United States

DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 002 Physiology
027 Biophysics, Bioengineering and Medical Instrumentation
029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 911213
Last Updated on STN: 911213

AB A dual-excitation inverted confocal **laser**-scanning **microscope** has been developed for measuring intracellular pH (pH(i)) using 2',7'-bis(2-carboxyethyl)-5,6-carboxyfluorescein (BCECF) in individual **cells** in the isolated perfused cortical collecting tubule (CCT). This new microscope has superior depth discrimination, which eliminates the **contribution** of **fluorescence** information from **cells** outside the plane of focus. pH(i) was monitored in real time from a spot 0.55 μm in diameter within a single **cell**. Experiments were performed to examine the apical and basolateral membrane H+/base transport properties of single principal **cells**. The results indicate that principal **cells** possess a basolateral membrane Na+-independent Cl-/base exchanger, a Na+-H+ antiporter, and a Na+/base cotransporter. No evidence was found for an apical membrane Na+-independence Cl-/base exchanger. The data provide evidence for base efflux pathways in the principal **cell** and are compatible with the hypothesis that principal **cells** contribute importantly to H+/base transport in the CCT. The new methodology described in this report can be applied to other epithelia that are optically heterogeneous in the depth dimension.

L43 ANSWER 79 OF 82 MEDLINE on STN DUPLICATE 25
ACCESSION NUMBER: 88218660 MEDLINE
DOCUMENT NUMBER: PubMed ID: 3285458
TITLE: 3-dimensional imaging of biological structures by high resolution confocal scanning **laser microscopy**.
AUTHOR: Brakenhoff G J; van der Voort H T; van Spronsen E A; Nanninga N
CORPORATE SOURCE: Department of Electron Microscopy and Molecular Cytology, University of Amsterdam, The Netherlands.
SOURCE: Scanning microscopy, (1988 Mar) 2 (1) 33-40.
Journal code: 8704616. ISSN: 0891-7035.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198806
ENTRY DATE: Entered STN: 19900308
Last Updated on STN: 19900308
Entered Medline: 19880620

AB Imaging in confocal microscopy is characterized by the ability to make a selective image of just one plane inside a specimen, virtually unaffected -within certain limits- by the out-of-focus regions above and below it. This property, called optical sectioning, is accompanied by improved imaging transverse to the optical axis. We have coupled a confocal microscope to a computer system, making the combination of both an excellent instrument for mapping the 3-dimensional structure of extended specimens into a computer memory/data array. We measured that the volume element contributing to each data point has, under typical fluorescence conditions, a size of 0.2 X 0.2 X 0.72 micron. The data can be analysed

and represented in various ways, i.e., stereoscopical views from any desired angle. After a description of the experimental arrangement, we show various examples of biological and food-structural studies. The microscope can be operated either in reflection or in fluorescence. In the latter mode a spectral element allows selection of the wavelength band of **fluorescence** light **contributing** to the image. In this way, we can distinguish various structures inside the **cell** and study their 3-dimensional relationships. Various applications in biology and the study of food structure are presented.

L43 ANSWER 80 OF 82 MEDLINE on STN DUPLICATE 26
ACCESSION NUMBER: 88134544 MEDLINE
DOCUMENT NUMBER: PubMed ID: 3435628
TITLE: Design for a fast **fluorescence laser** scanning **microscope.**
AUTHOR: Shack R V; Bartels P H; Buchroeder R A; Shoemaker R L; Hillman D W; Vukobratovich D
CORPORATE SOURCE: Optical Sciences Center, University of Arizona, Tucson 85721.
CONTRACT NUMBER: 5 PO1 CA38548-03 (NCI)
SOURCE: Analytical and quantitative cytology and histology / the International Academy of Cytology [and] American Society of Cytology, (1987 Dec) 9 (6) 509-20.
Journal code: 8506819. ISSN: 0884-6812.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198803
ENTRY DATE: Entered STN: 19900308
Last Updated on STN: 19970203
Entered Medline: 19880328

AB The design of a fast **fluorescence laser** scanning **microscope** is described and illustrated, with discussion of the design consideration of the **principal components,** including the optical elements. The system, now under construction at the Optical Sciences Center of the University of Arizona, is expected to provide very-high-speed scanning, at a high spatial sampling density, of large object areas while retaining a flexibility of applications. The projected scanning rate approximates the rate achieved by flow cytometry; the projected rates of information generation should be orders of magnitude higher.

L43 ANSWER 81 OF 82 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
ACCESSION NUMBER: 1988:198049 BIOSIS
DOCUMENT NUMBER: PREV198885099395; BA85:99395
TITLE: IN-VIVO FLUORESCENCE YIELD EXCITATION 675 NM EMISSION 730 NM AND SPECIFIC IN-VIVO ABSORPTION COEFFICIENT OF CHLOROPHYLL ALPHA AT 675 NM VARIATIONS IN QUANTUM YIELD.
AUTHOR(S): MASKE H [Reprint author]; HAARDT H
CORPORATE SOURCE: ABT MARINE PLANKTOL, INST MEERESKUNDE, DUESTERNBROOKER WEG 20, D-2300 KIEL
SOURCE: Ergebnisse der Limnologie, (1987) No. 29, pp. 123-130.
CODEN: ERLIA6. ISSN: 0071-1128.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 21 Apr 1988

Last Updated on STN: 21 Apr 1988

AB The in vivo fluorescence of phytoplankton cultures and samples from Kiel harbor [West Germany] were measured in a spectral fluorometer (excitation wavelength 675 nm, emission wavelength 730 nm). Samples were corrected for instrument and quantum response with the help of Oxazin. The values of specific fluorescence yield (**fluorescence** per in vitro Chl-a **concentration**)**vary** about 6 fold for our **samples** . The specific in vivo absorption coefficients (absorption coefficient per in vitro Chl.a concentration) of the same samples were determined within an integrating **sphere**. The values varied about 2.5 fold due to the package effect. Low sample concentrations and small cuvette dimensions provided proportionality of the rate of light absorption by the sample in the fluorometer and absorption coefficients of the sample. If constant quantum yield of fluorescence is assumed this should lead to proportionality of specific fluorescence yield and specific absorption coefficients. The data show no significant statistical dependence of both parameters, suggesting that changes in quantum yield of fluorescence (factor 11 for this data) are responsible for variations in specific fluorescence.

L43 ANSWER 82 OF 82 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 1983-833586 [49] WPIDS
DOC. NO. NON-CPI: N1983-216569
TITLE: Automatic focussing device for illuminated **microscope** - has modulated **laser** as source for measuring beam and shutter for beam half masking.
DERWENT CLASS: P81 S03
INVENTOR(S): NEUMANN, B; REINHEIMER, G
PATENT ASSIGNEE(S): (LEIT) LEITZ WETZLAR GMBH ERNST
COUNTRY COUNT: 6
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
DE 3219503	A	19831201	(198349)*		26
GB 2122045	A	19840104	(198401)		
FR 2527788	A	19831202	(198402)		
DE 3219503	C	19850808	(198533)		
GB 2122045	B	19851002	(198540)		
US 4595829	A	19860617	(198627)		
CH 664835	A	19880331	(198816)		
AT 8301778	A	19881115	(198851)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 3219503	A	DE 1982-3219503	19820525
GB 2122045	A	GB 1983-12404	19830506
US 4595829	A	US 1983-496587	19830520

PRIORITY APPLN. INFO: DE 1982-3219503 19820525
AN 1983-833586 [49] WPIDS
AB DE 3219503 A UPAB: 19930925
The focussing device generates a measuring light spot on an object surface by an eccentrically extending, separate measuring beam. After blanking out the light spot is reproduced on a photoelectric device for object

focussing control. The focussing device comprises a light source generating pref. modulated laser light for the measuring beam.

An optical component geometrically shutters one half of the illumination-side measuring beam and simultaneously geometrically shutters the remitted measuring beam from the measuring beam path. A lens system is displaceable in an axial direction in defined manner. The photo-electric device is formed by a differential diode. A **dichromatic** splitting **mirror** introduces the illumination-side measuring light beam into the illumination beam path of the microscope, or blanks out the remitted light beam from the illumination beam of the microscope. 0/4

ABEQ DE 3219503 C UPAB: 19930925

The appts. comprises a light source (LD) for producing laser light for the measuring radiation beam (M). An optical component (18) geometrically stops down a half of the illumination side measuring beam (Mb) together with simultaneous geometric stopping down of the remitted measuring beam (Mr) out of the measuring beam path.

The light source produces modulated laser light for the measuring beam. A divider reflector (T2) is dichroitic and a photoelectric unit is made up of difference diodes (D1,D2).

USE/ADVANTAGE - Esp. for light microscope. For optimal automatic focussing independent of object structure.

ABEQ GB 2122045 B UPAB: 19930925

An automatic focussing control device for optical observation apparatus, the focussing control device comprising a light source for emitting a measuring light beam, masking means for geometrically masking one half of the measuring beam, first deflecting means firstly to deflect the other half of the measuring beam into an object illumination beam path in the apparatus for transmission eccentrically of the optical axis of the beam path through focussing means of the apparatus to provide a measurement spot on the surface of an object to be observed and then to be reflected eccentrically of said axis back from the object surface and secondly to deflect the reflected measuring beam half back out of the illumination beam path, second deflecting means to geometrically deflect the reflected measuring beam half, after deflection by the first deflecting means, out of a path back to the light source, differential diode means arranged to be so responsive to the position of an image of the measuring spot derived from the reflected measuring beam half after deflection by the second deflecting means as to detect any deviation of the plane of the object surface from the focussing plane of the focussing means and to provide a control signal indicative of any such deviation for controlling control means to so vary the relationship of the focssing means and the object as to counteract the deviation, and a lens system displaceable parallel to the axis of the measuring beam to provide defined defocussing of said other measuring beam half.

ABEQ US 4595829 A UPAB: 19930925

The apparatus comprises a source of light to produce a preferably pulsed, laser light for the full measuring beam, an optical structural element for geometrically blocking one-half of the full measuring beam to produce the eccentric measuring beam and simultaneously for geometrically blocking the reflected measuring beam from the path of the full measuring beam. A lens is positioned in the measuring beam and a photodetector device in the form of a differential photodiode pair is positioned to receive the reflected measuring beam.

A divider **mirror**, preferably **dichromatic**, is provided for introducing the measuring beam into the path of the illuminating beam of the optical device and for reflecting the reflected measuring beam from the path of the illuminating beam of the optical instrument.

ADVANTAGE - Accurate regardless of wavelength of measuring light, objective employed or optical element available.

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=> d his

     (FILE 'HOME' ENTERED AT 13:56:46 ON 25 APR 2005)

     FILE 'MEDLINE, HCAPLUS, BIOSIS, EMBASE, WPIDS, SCISEARCH, AGRICOLA'
     ENTERED AT 13:57:13 ON 25 APR 2005
L1          141 S BEARMAN G?/AU
L2         2733 S FRASER S?/AU
L3          197 S LANSFORD R?/AU
L4         3024 S L1-L3
L5            4 S L4 AND TUNABLE(5A)FILTER?
L6         5510 S TUNABLE(5A)FILTER?
L7            0 S L6 (5A)(FLUORESCEN? OR EXCITAB?)(5A)(MARKER? OR LABEL?)
L8           14 S L6 AND (FLUORESCEN? OR EXCITAB?)(5A)(MARKER? OR LABEL?)
L9        54828 S (LASER OR TWO(3A)PHOTON? OR MULTI(3A)PHOTON? OR MULTIPHOTON?)
L10         119 S L9 AND SEPARAT?(5A)FLUORESC?
L11          79 S L10 AND CELL?
L12           9 S L10 AND CELL?(5A)ACTIVIT?
L13           3 S L10 AND LINEAR(5A)UNMIX?
L14          17 S L9 AND LINEAR(5A)UNMIX?
L15          20 S L10 (5A)FILTER?
L16        2878 S CONTRIBUT?(5A)FLUORESCE?
L17          37 S L16 AND L9
L18          24 S L17 AND CELL?
L19           7 S L10 AND CONTRIBUT?
L20       14626 S FLUORESCE?(5A)(RATIO OR RATIOS)
L21         300 S L20 AND L9
L22         255 S L21 AND CELL?
L23          43 S L21 AND ACTIVIT?
L24           9 S L21 AND CELL?(5A)ACTIVIT?
L25          48 S L9 AND PRINCIPAL(5A)COMPONENT?
L26          19 S L25 AND FLUORESC?
L27           1 S L9 AND DICHROMATIC(5A)MIRROR?
L28           5 S L9 AND LIQUID(5A)CRYSTAL?(5A)FILTER?
L29          25 S L9 AND ACOUST?(5A)OPTIC?(5A)FILT?
L30          75 S L9 AND PHOTOMULTIPLIER?(5A)TUB?
L31          52 S L30 AND FLUORESC?
L32           1 S L31 AND ACTIVIT?
L33        2108 S INTEGRATING(5A)SPHERE?
L34           0 S L33 AND L9
L35         279 S L9 AND (GRATING OR PRISM)
L36          80 S L35 AND FLUORESC?
L37          15 S L36 AND FILTER?
L38        2163 S (VARY OR VARI?)(5A)(AMOUNT? OR CONCENTRAT?)(5A)(FLUOR? OR MAR
L39          54 S L38 (5A)(STANDARD? OR MODEL? OR SAMPL?)
L40           2 S L39 AND SPHER?
L41         153 S L5 OR L8 OR L12 OR L14 OR L15 OR L18 OR L19 OR L24 OR
L42         151 S L41 NOT MACHINE(3A)TRANSLATION
L43          82 DUP REM L42 (69 DUPLICATES REMOVED)
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